

**RESTRICTED**  
Security Information

DEPARTMENT OF THE ARMY  
TECHNICAL MANUAL

**TM 11-454**

DEPARTMENT OF THE AIR  
FORCE TECHNICAL ORDER

**T016-1-110**

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# RADIOTELEGRAPH OPERATION

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*DEPARTMENTS OF THE ARMY AND THE AIR FORCE  
AUGUST 1953*

AGO 285B—Jul

**RESTRICTED**



°TM 11-454/TO 16-1-110

TECHNICAL MANUAL }  
No. 11-454 }  
TECHNICAL ORDER }  
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DEPARTMENTS OF THE ARMY AND  
THE AIR FORCE

WASHINGTON 25, D. C., 14 August 1953

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\* This manual supersedes TM 11-454, 12 May 1943 including Errata sheet, 23 June 1943; C 1, 7 October 1944; and C 2, 31 July 1945.

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## CHAPTER 1

# INTRODUCTION

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### 1. Purpose

This manual is written for use in training army radio operators.

### 2. Scope

a. This manual contains radiotelegraph procedure, based on Allied Communications Publication 124(A) [ACP 124(A)], which will be used for the following signal communication:

- (1) With the U. S. Army.
- (2) Joint communication between the U. S. Army, the U. S. Navy, and the U. S. Air Force.
- (3) Between the U. S. Army and any of the military forces allied with those of the United States, if such force is an authorized user of the ACP 124 publications.

b. This manual does not replace ACP 124(A), which is the final authority in matters of radiotelegraph procedure. It does not contain radiotelephone procedure, which is prescribed by ACP 125(A).

c. The presentation of the subject material is intended to follow a sequence suitable for teaching radiotelegraph procedure. No particular teaching method is specified, nor are lesson plans provided. TM 11-459 may be used in teaching International Morse Code.

d. Many of the subjects are necessarily treated briefly. The information which is required most often by the operator is, however, included in this manual. When doubt of interpretation arises or if further information is desirable, the reader should refer to appropriate ACP publications.

### 3. Definition of Terms

As used in this manual, the following terms have the meanings shown opposite each:

a. *Circuit.* A radiotelegraph communication link between two or more stations.



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b. *Contact Report*. A report containing information of the enemy given by units coming in first contact with the enemy. The first such report is called the *initial contact report*, and contains information immediately available.

c. *Copy*. Continuous receiver watch maintaining a complete log.

d. *Cover*. Continuous receiver watch with transmitter calibrated and available but not necessarily ready for immediate use.

e. *Guard*. Continuous receiver watch with transmitter ready for immediate use.

f. *Listen*. Continuous receiver watch for reception of traffic addressed to or of interest to unit served by station, with complete log optional.

g. *Net*. A radiotelegraph communication system consisting of two or more designated stations, all of which transmit and receive on the same prescribed frequency.

h. *Radiotelegraphy*. Radio communication by means of International Morse characters.

i. *Response*. The term *response* includes any of the following:

(1) *Answer*. The transmission made by a station called in reply to the call received.

(2) *Acknowledgment*. A separate message from the addressee informing the originator that his message has been received and is understood.

(3) *Receipt*. A communication sent by the receiving station indicating that the message or other transmission has been satisfactorily received by that station.

(4) *Reply*. A message originating out of, referring to, or replying to a question asked in a prior message.

j. *Traffic*. All transmitted and received messages.

k. *Trick*. A period of time on duty as a radio operator.

l. *Transmission*. A communication sent by one station and intended for reception by another station or stations.



## CHAPTER 2

### PRELIMINARY INSTRUCTIONS

---

#### Section I. COMMUNICATION

#### 4. Purpose of Radiotelegraph Procedure

Radiotelegraph procedure is designed to provide a concise and definite language whereby radio communication may be conducted accurately, rapidly, and with security. Appropriate use demands that the operator be objective in curtailing superfluous or excessive transmission. Radio transmissions are interceptable by the enemy; elaborations or short-cuts and other variations from prescribed procedure are sources of operating habits and tendencies leading to serious security failures. Accordingly, any deviation is not authorized.

#### 5. Establishing Communications

A radio station is identified by a call sign, which consists of one or more letters, or numbers, or combinations of letters and numbers. Call signs for army stations in the field normally are assigned in current SOI's (Signal Operation Instructions). Establishing communications is done by exchanging call signs and certain procedure signs between a called and calling station.

a. A complete exchange of call signs is referred to as a preliminary call. The preliminary call may be omitted after communication is established, provided operating conditions on the net are normal. If omitted, the calling station transmits a call and proceeds with transmission of message without waiting for an answer to his call.

b. The details of calling and answering are contained in paragraphs 9, 10, and 12.

#### 6. Use of Call Signs

Call signs are used fundamentally for calling and answering. In addition, however, the procedure provides that their appearance in certain portions of a message transmission is indicative of command address and origin of the message. It is important at all times to transmit call signs slowly and distinctly.

## 7. Types of Call Signs

There are several defined types of call signs, all of which are modifications of a basic definition for the term *call sign*. Certain of these types must not be used on radiotelegraph circuits; for example, a *visual* or a *voice* type is confined to its respective means of transmission and is not authorized for use on radio telegraph circuits.

- a. The basic definition for a call sign is as follows:

CALL SIGN—Any combination of characters or pronounceable word(s) which identifies a communication facility(ies), command(s), authority(ies), activity(ies) or unit(s). Used primarily for establishing and maintaining communications.

- b. The most common type of call sign assigned for use in the field is known as a *tactical call sign*. It is defined as follows:

CALL SIGN, TACTICAL—A call sign which identifies a tactical command(s) or tactical communication facility(ies).

- c. There are many occasions when two or more stations, or commands thereof, have a particularly organized status and may or may not be on a common frequency. Frequently, in interests of security or of shortening the transmission time, a single call sign is assigned to include all such stations or commands. This type of call sign is referred to as *collective*. It is defined as follows:

CALL SIGN, COLLECTIVE—A call sign which represents two or more facilities, commands, authorities, or units. (The collective call sign for any of these includes the commander thereof and all subordinate commanders therein.)

- d. The term *collective* is applicable for any type of call sign when appropriate. For example, a tactical call sign may be collective. There is need, however, for a specific term when indicating all stations on a certain channel or frequency. Such stations constitute a *net*. This type of call sign is defined as follows:

CALL SIGN, NET—A call sign which represents all stations within a net.

- e. Certain communication situations require concealing the identity of the station originating the transmission and/or the station addressees for which intended. The various methods of accom-

publishing this concealment are described in chapter 10. Depending on the situation, call signs will be assigned to be more or less indefinite in their meaning. This type of call sign is referred to as *indefinite* and is defined as follows:

**CALL SIGN, INDEFINITE**—A call sign which does not represent a specific facility, command, authority, activity, or unit, but which may represent any one or any group of these.

f. The definitions of other types of call signs are listed in appropriate ACP's and JANAP's.

## 8. Sequence of Call Signs

In calling and answering and in the components of messages, call signs are usually placed in alphabetical order, assuming for this purpose that the figures 1 through 0, respectively, are the 27th through 36th letters of the alphabet. However, a calling station may place the call signs in the sequence in which replies are desired.

*Example:* BE6 FAR M2D NOD P7Z VF8 XP5 2NW 9SV

## 9. The Call

The purpose of a call is to establish communication or to direct transmission to a station or stations. A call is used in the *answer* as well as initial transmissions. The expressions *single call* and *multiple call* refer only to the number of call sign(s) used and should not be confused with a series of repeated calls or with a collective type of call sign. For example, if two or more stations are being called simultaneously, each by its own call sign, it is a multiple call; but, if by a collective type of call sign, it is a single call.

a. The order in which elements of a call are transmitted is standard. An abbreviated form of call is permitted in the answer by omitting the call sign of called station (*d* below). A preliminary call and its answer always ends with procedure sign K; on other occasions, the call merely precedes the transmitted message or other information. The call signs of the called and the calling stations are always separated by the procedure sign DE.

b. The use of a collective call sign in a single or a multiple call is conditional on the desire of the calling station to shorten transmission time to a minimum, the number of stations present or in-

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tended to receive a particular transmission, and the meaning of the collective call sign being used. There will be occasions when stations present are not covered by the collective call sign meaning; these must be called only by their own call sign. On certain occasions, it may seem desirable to use the collective call sign, but certain stations included therein should not receive or record the transmission and must be exempted. The examples in *d* below show how the call would be formed when all of these conditions exist.

*c.* When operating conditions are difficult, each of the call signs in the call will be transmitted twice.

*d.* In the examples of single and multiple calls which follow, the procedure sign XMT means: "The station(s) or addressee(s) immediately following is exempted from the collective call or address"; it may be used in a net call, which is usually collective.

	<i>Preliminary Call (calling)</i>	<i>Call (answering)</i>
<i>Single call:</i>	VF8 DE M2D K	M2D DE VF8 K
<i>Multiple call:</i>	NOD VF8 DE M2D K	M2D DE VF8 K
<i>Single call</i> (collective call sign) :	G2C DE AN4 K	AN4 DE M2D K DE XP5 K AN4 DE 9SV K
<i>Multiple call</i> (including a collective call sign from which a station is exempted) :	55H—XMT P7Z— 9SV DE XP5 K	DE BE6 K DE FAR K DE 9SV K

*e.* In the example of a multiple call (*d* above) only three stations are shown to answer the call. Practical operating would indicate that transmission time for the call would be shorter if the collective call sign had not been used. If, however, there had been four or more stations covered by the collective call sign the method shown in this example would be the most practical.

## 10. Calling Rules

*a.* Before transmitting, the operator shall listen on his assigned frequency until he is sure his transmission will not cause harmful interference to transmissions in progress. An operator may break in on another station's transmission only as prescribed in paragraphs 43 and 87.

*b.* If a called station fails to answer promptly, the call is repeated. If the second call is not answered, the calling station will

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wait a reasonable time and call again, giving consideration to other stations which may need to use the frequency and to other circumstances.

c. The operator must constantly bear in mind that enemy radio intelligence monitoring stations are more likely to gain valuable information when call signs are transmitted more frequently than necessary, and that enemy direction-finding stations will welcome any prolonged transmission. One goal of training should be station contact and message exchange with the fewest and shortest possible transmissions.

### 11. Ending Transmission

a. Every transmission must end with the prosign K or the prosign AR.

b. AR means, "This is the end of my transmission to you and no response is required or expected." However, this does not forbid requests for repetition or verification, when such are necessary.

c. K means, "This is the end of my transmission to you and a response is necessary."

#### *Examples*

M2D DE 2NW R AR  
XP5 DE AN4 IMI K

### 12. Answering

a. The answer is similar in form to the call; it consists of the call sign of the calling station, the prosign DE, the call sign of the answering station, and the prosign K.

#### *Example*

M2D DE VF8 K

b. Unless instructed otherwise, when more than one station is called, they answer in the sequence used in the call. Stations included in a collective call sign answer in the alphabetical sequence of their individual call signs.

#### *Examples*

- |                      |                   |
|----------------------|-------------------|
| (1) XP5 9SV DE AN4 K | (Multiple call)   |
| AN4 DE XP5 K         | (XP5 answers)     |
| AN4 DE 9SV K         | (9SV answers)     |
| (2) G2C DE AN4 K     | (Collective call) |
| AN4 DE M2D K         | (M2D answers)     |
| AN4 DE XP5 K         | (XP5 answers)     |
| AN4 DE 9SV K         | (9SV answers)     |

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c. If any station fails to answer a multiple or collective call in correct sequence, the next station waits 5 seconds and answers. Any station which fails to answer in proper order must wait until all other stations have answered or have had time to answer. A station which missed its first turn will then answer; if two or more stations have missed their first turns, they will then answer in correct sequence.

d. When a station fails to answer in sequence, then fails to answer within 5 seconds after all other stations have answered, the calling station makes a separate call to raise that station.

e. When any station included in a multiple or collective call is specifically directed to answer, no other station included in that call may answer until instructed to do so.

f. When the called station is not prepared to accept traffic, the prosign  $\overline{AS}$  may be used as follows:

### Examples

M2D DE NOD  $\overline{AS}$  ("I must wait a few seconds.")

M2D DE NOD  $\overline{AS} \overline{AR}$  ("I must wait an indefinite period.")

M2D DE NOD  $\overline{AS} 5 \overline{AR}$  ("I must wait about 5 minutes.")

g. When no confusion can result, the call sign of the calling station may be omitted from any answer.

### Examples

FAR DE XP5 K (Call)

DE FAR K (Abbreviated answer)

h. When an operator hears a call without being certain that the call is intended for his station, he shall not answer until the call has been repeated and is understood. When an operator hears a call but is uncertain of the call sign of the calling station, he answers immediately by transmitting the prosign  $\overline{AA}$  followed by DE and the call sign of his own station.

### Example

The operator at 9SV hears a call intended for his station, but has missed the call sign of the calling station. The operator at 9SV transmits:  $\overline{AA}$  DE 9SV K

## 13. Receipt

a. The passing of a message from one station to another is done by any one of three methods: receipt, broadcast, or intercept. Each method has particular details as to calling, answering, and trans-

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mitting the message. The most frequently used method is the receipt method whereby the receiving operator always transmits a receipt (after repetitions, if any), thus assuring absolute reception of the message. The procedure sign R is used for this purpose. The receipt is accomplished by a call, the prosign R, and an ending sign. When the receipt method is being used, the transmission of a message cannot be considered complete until the receiving operator has receipted for the message.

b. The careful use of R cannot be overemphasized. The prosign R will not be sent until the receiving operator is certain that the message or information received is correct and in the proper form. For example, BE6 sends P7Z a message; at the end of the message he terminates his transmission with the prosign K, thereby indicating that a receipt is desired, thus:

### *Examples*

P7Z DE BE6 (the message) K (BE6 sends the message)  
BE6 DE P7Z R AR (P7Z receipts)

## 14. Correction of Error

When an error is made in a transmission, the transmitting operator immediately makes the error prosign, a string of eight or more dits (EEEEEEEEEE), then repeats his last word, group, prosign, or operating signal which was correctly sent and continues with the transmission. For example, 9SV intends to make the following transmission: XP5 DE 9SV K; by accident, the letter D is sent as B. Then the entire transmission becomes:

### *Example*

XP5 BE EEEEEEEEEEE XP5 DE 9SV K

## 15. Repetitions

a. A request for a repetition of a complete transmission is made by sending the prosign IMI. This prosign means: *repeat*.

### *Example*

M2D DE VF8  
IMI K

In response, M2D would repeat the entire transmission just completed. Used in this way, IMI is a short procedure message meaning, "Please repeat all of the last transmission."

b. If a receiving operator needs a repetition of *only a portion* of a message, he should not request repetition of the entire message, since this practice wastes valuable time. For methods of requesting repetition of portions of messages, see paragraphs 82, and 70q.



## 16. Interrogation

To ask a question, the prosign  $\overline{\text{INT}}$  is used.

*Example*

AN4 DE M2D  $\overline{\text{INT}}$  K

In this way M2D asks AN4, "May I transmit?"

## 17. Operating Signals

a. Communication operating signals are three-letter combinations beginning with Q or Z used to facilitate the handling of traffic, to direct net operation, or to convey certain instructions in a message. The meaning of certain operating signals may be amplified or completed by the addition of a number(s) and/or a call sign(s).

b. Certain operating signals are used by aircraft to convey operational information and meteorological advice.

c. All operating signals are listed and explained completely in JANAP 131(A), which should be consulted before operating signals are used. Operating signals used in this manual are listed and explained in the appendix.

## 18. Readability and Signal Strength

a. It is of interest to a transmitting operator to know the readability of his signal at the receiving station. Readability is an estimate of the ease with which the receiving operator can interpret and copy incoming Morse characters. This estimate depends on:

- (1) The capability and determination of the receiving operator.
- (2) The relative strength of the signal versus natural and man-made interference of various sorts.
- (3) The proper tuning of the transmitter and receiver.

b. The use of signal strength reports generally is limited to those occasions in which the actual signal strength rather than readability is the determining factor. They are particularly applicable when changes have been made in equipment, power, location, or other transmitting conditions, making a test report of signal strength desirable.

c. Readability and signal strength are indicated by numbers following the operating signals QRK and QSA, respectively, as indicated in the following table:

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Report	Readability (QRK)	Signal strength (QSA)
1	Unreadable	Scarcely perceptible
2	Readable, now and then	Weak
3	Readable, but with difficulty.	Fairly good
4	Readable	Good
5	Perfectly readable	Very good

d. To eliminate unnecessary transmissions, an operator assumes that his signals are readable unless he is otherwise notified. Readability reports will not be made unless one operator cannot clearly read another's signals.

## Examples

XP5 informs BE6 that his readability is poor: BE6 DE XP5 QRK2K

BE6 after returning his transmitter transmits: XP5 DE BE6 INT QRK K

Assuming that BE6's readability is now good, XP5 transmits: BE6 DE XP5 QRK4 AR

## 19. Tuning Signals

a. Assume that FAR has difficulty tuning in XP5's signals. FAR may request a tuning signal by use of the operating signal QSV, meaning: Send a series of V's on this frequency (or on \_\_\_\_\_ kc). A series of V's is the standard tuning signal.

b. Upon receiving this request, XP5 will make a call, send a series of five or six V's followed by his own call sign, repeat this operation two or three times, send K, and stop to listen. If no reply is heard from FAR, XP5 will send another tuning signal as explained above. By this time FAR should have XP5 tuned in properly. However, if FAR desires further tuning signals, he may make another request.

## Example

XP5 DE FAR QSV K (FAR requests tuning signals on present frequency)

FAR DE XP5 VVVVVV XP5 (XP5 sends tuning signal)  
VVVVVV XP5 K

c. The transmission of tuning signals should be kept to a minimum. Tuning signals are just as useful as regular transmissions to enemy direction-finding stations. Operators must remember that unnecessary transmissions should never be made.

## 20. Transmitting Speeds and Techniques

a. Accuracy in transmission is far more important than speed. The difference in time required to send a message at 18 words per minute and that required to transmit it at 25 words per minute is slight. Even this slight gain in time may be nullified by added time required for repetitions.

b. The speed at which the receiving operator can copy without having to obtain repetitions is the speed at which the transmitting operator will transmit. When transmitting to more than one station in a net, the speed of the transmitting operator will be that of the slowest receiving operator. The operating signal QRS may be used to request slower transmission. If desired, the number of words per minute may be specified by a number following QRS.

c. The speed of transmission of headings on manually operated circuits should be slower than the speed of transmission of texts.

d. When advisable, the NCS (Net Control Station) should prescribe the speed of transmission on a circuit or the qualifications of operators to be used during specific periods.

e. When authorized by the NCS, speed keys may be used on manually operated circuits if traffic conditions warrant and if operator capabilities permit.

f. Each character shall be transmitted clearly and distinctly. The transmitting operator must not expect the receiving operator to read sloppy keying.

## Section II. STATION ADMINISTRATION

### 21. Chief Operator's Duties

a. The chief operator of a radio station is responsible for the proper handling of traffic. It is essential that he have complete control of the radio personnel and the radio equipment in use in order to accomplish this responsibility. His knowledge must include the proper functioning of transmitters and receivers, as well as the procedure used in the handling of messages. While on duty, he will normally be where he can best observe the entire conduct of operation. Since the specific duties of the chief operator vary greatly because of the size, location, and work of different stations, it will be necessary for the person responsible at each station to issue specific additional instructions for the guidance of the chief operator.

b. The chief operator should appoint the best qualified person on each trick to have supervisory authority. Such designate is

usually known as a trick chief. The chief operator and the trick chief assure that all personnel on each trick are ready for duty, which includes giving them any necessary special orders or information. Personnel must inform their reliefs of any alteration in radio organization, the status of traffic, and the condition of receivers, transmitters, and controls.

c. Provided the necessary equipment is available, the chief operator should be required to devote as much time as practicable to listening in on circuits operated by his operators. He should assure further training or correction of operators who violate instructions, report through proper channels the discrepancies of other stations, and exercise various initiatives to insure efficient handling of messages and security of operations. The chief operator may delegate such responsibility as may be required, particularly when a station's size and duties require the designation of trick chiefs.

d. A certain amount of file keeping is mandatory at any military communication facility. An officer determines the number of files to be maintained, their titles, the in-station methods of associating these files to current operations, storage, length of time to be maintained, and their eventual disposition. It is the responsibility of the chief operator, or his designates, to maintain those files which are essential to current operations. For example, a file of all transmitted messages is an ordinary requirement; such a file must show the date and time of receipt by the receiving station, the operators personal sign, station serial number (if used), call sign of the receiving station, frequency, and circuit or means used.

## **22. Operators' Duties**

a. Radio operators should be assigned tours of duty in accordance with their ability. While on duty they will come under the authority of the chief operator.

b. The attainment of reliability, speed, and security depends on the operator. It is essential that he be well trained and that he thoroughly understand his responsibilities.

c. The operator must always use the prescribed procedure. Unauthorized changes in procedure invariably create confusion, reduce reliability and speed, and decrease communication security.

d. Before an operator turns over his circuit to the operator who relieves him, he must be sure that his relief is ready for duty in all respects. He will pass on to his relief any special orders concerning his circuit and all necessary or useful information con-

cerning messages awaiting transmission, changes in radio organization, and other pertinent matters.

e. The relieving operator will determine before his predecessor leaves the radio set or operating position whether the transmitter and receiver are in efficient operating condition and properly tuned to the assigned frequency.

f. The radio operator vigilantly guards, covers, copies, or listens to his circuit, as directed.

## 23. Operator's Personal Sign

The operator's personal sign is a single letter or a combination of two letters used for identifying each operator. The personal sign appears on messages and on station records. At any one station or at a headquarters having more than one station, no two operators will have the same sign. The operator's personal sign is never transmitted.

## 24. Operator's Indorsement

a. Every message will be indorsed by the transmitting and receiving operators. The operator's indorsement is written in any convenient place on the message blank according to local instructions.

b. The operator's indorsement will always contain the operator's personal sign and the time of receipt by the receiving station (operator).

c. If, for any reason, the call sign of the station to which the message was transmitted or from which the message was received does not appear in the call on the message blank, such station's call will appear in the operator's indorsement.

### *Examples*

2315Z JD (An ordinary indorsement)

XP5 1004Z JD (Indorsement showing a call sign)

## 25. Station Serial Number

a. The station serial number is a number assigned by an operator to an outgoing message and transmitted with the message. It is used only to assist in handling, recording, and checking traffic. It is usually convenient to use the numbers on the Operator's Number Sheet, WD AGO Form 11-53, as station serial numbers. Any station using station serial numbers will maintain a separate series of numbers for each station with which it communicates.

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For each station a new series of numbers will begin at 0001 hours each day. The first message of each series will be numbered 1.

b. For security reasons, station serial numbers should be used only when the volume of traffic is large enough to require their use in maintaining records and avoiding loss of messages. When call signs are changed for security purposes or to avoid jamming, the old series of numbers should not be continued. If call signs or frequencies are changed often for security purposes or to avoid jamming, station serial numbers should not be used.

c. Procedure messages incidental to the direct transmission of a message between two stations are not numbered. Stations using station serial numbers may number procedure messages when relayed or when used for inquiries, instructions, or information regarding messages which already have been receipted for.

### 26. Circuit Log

a. Circuit logs will be maintained by all stations and will show every transmission on all radio frequencies guarded, covered, or copied. The reverse side of the operator's number sheet, WD AGO Form 11-53, is usually convenient for this purpose.

b. Each operator will keep a circuit log. The log will normally show a complete and continuous record of all transmitted and received traffic and operating conditions which occur during the day. The log should include such data as:

- (1) The time of opening and closing station or circuit.
- (2) Causes of delays on the circuit.
- (3) Frequency adjustments and changes.
- (4) Unusual occurrences such as procedures and security violations.
- (5) Natural interference or jamming, when encountered.

c. When operating conditions permit and when there are no instructions to the contrary, every transmission heard by an operator guarding a circuit, regardless of source or completeness, will be recorded.

- (1) When the message is addressed to or is to be relayed by the receiving station, the message should be written in full on a message blank. Therefore, only sufficient details to identify the message need be entered in the log.
- (2) If it is not recorded in full on a message blank, the transmission will be recorded as completely as practicable in the circuit log.

d. A time entry will be made in the circuit log at least every 5 minutes. If the operator is too busy to do this over a period of

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time, he may enter the essential data later, indicating inclusive times.

e. When opening a new circuit or starting a new day's log, the operator will write or type his name and grade in full. When an operator is relieved or closes the circuit, he will sign the log. The incoming operator will then write or type his name and grade in full in the log.

f. Log entries will not be erased. Any necessary changes will be made by drawing a single line through the original entry and indicating the changed version adjacent to the lined out entry. Such changes will be initialed by the operator who makes them.

g. Maintaining a log will not be permitted to interfere with the movement of traffic. However, for training purposes, some time will necessarily be spent in keeping logs, and traffic may be slowed for this purpose.

## Example

### CIRCUIT LOG

Frequency 4815 kc

Date—3 March 1952—Sheet 1—Station call FAR—Net Call 55H—  
Station opened 0716Z—Cpl A B Jones—Operator

<i>Time</i>	<i>Transmission</i>
0716	Cpl A B Jones on duty
0801 55H 55H DE XP5 XP5	K
XP5 DE BE6	K
XP5 DE FAR	K
XP5 DE P7Z	K
0805 55H DE XP5	R AR
BE6 DE P7Z	—OP—BT XPBF RULJ BT
	0751Z K
0812 DE BE6	R AR
FAR DE XP5	—O—GR12 (see files
	030801Z)
0816 XP5 DE FAR	R AR
0821 No Signals	
0824 Transmitter out of order	
0829 FAR DE BE6	K
FAR DE BE6	K
0830 FAR FAR DE BE6 BE6	K
Replaced transmitter tube	
Back on air	
0831 BE6 DE FAR	K
FAR DE BE6	—P—GR12 (see files
	030805Z)
BE6 DE FAR	R 030805Z K



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	<i>Time</i>	<i>Transmission</i>
	XP5 DE P7Z	GR14 <u>BT</u> LPAF SSBE HYRD XCB (TTTT-O-) (BE6 breaking P7Z)
	P7Z DE BE6	—O— <u>BT</u> FFGR QEWA <u>ZVSE BT</u> 030825Z K
	BE6 DE P7Z	<u>IMI 2 K</u>
	P7Z DE BE6	2— <u>QEWA K</u>
0835	BE6 DE P7Z	R <u>AR</u>
0836	XP5 DE P7Z	AA 3—XCBJ LKUI VGIJ MNBG CDRG LOIP GYUI OIYR DGER VRPL <u>CSEW BT</u> 0829Z K
0838	P7Z DE XP5 XP5 DE FAR	R <u>AR</u> —O—GR12 (see files 030825Z)
0840	FAR DE XP5 55H DE XP5 DE BE6 DE FAR DE P7Z	R <u>AR</u> ZAN P K R <u>AR</u> R <u>AR</u> R <u>AR</u>
0841	P7Z DE BE6 BE6 DE P7Z P7Z DE BE6	OP K K —OP— <u>BT</u> LYFE STHU XFTU OUTE BNFH <u>BT</u> 0821Z B OP K
	BE6 DE P7Z P7Z DE BE6	R K —OP— <u>BT</u> NFYT CFTH KURZ BFTR <u>BT</u> 030827Z K
	BE6 DE P7Z	R K
0844	P7Z DE BE6 BE6 DE P7Z	K —P—GR6 <u>BT</u> VTUF MUTF XDRE LDWE <u>XNFY LOLK BT</u> 030824 K
	P7Z DE BE6	R <u>AR</u>
0849	No Signals 55H DE XP5 XP5 DE BE6 XP5 DE FAR	ZAN—P—ZUG K R <u>AR</u> R <u>AR</u>
0850	XP5 DE P7Z 55H DE XP5 XP5 DE BE6 XP5 DE FAR	R <u>AR</u> ZKJ1 K R <u>AR</u> R <u>AR</u>
0854	XP5 DE P7Z	R <u>AR</u>
0855	Closed circuit	(signed Cpl A B Jones)

## 27. Time and Date

a. Time is expressed in the 24-hour clock system, always using four digits.

### Examples

0002 means 12:02 a.m.

0101 means 1:01 a.m.

1301 means 1:01 p.m.

2134 means 9:34 p.m.

b. For use in connection with radio messages, the date and time are expressed by a six-figure group called the date-time group. The first two digits express the date and the last four digits express the time.

### Examples

151617 means 1617 hours of the 15th day of the month

240005 means 0005 hours of the 24th day of the month

011312 means 1312 hours of the 1st day of the month

## 28. Zone Designation Letter

a. All times will be followed by a zone designation letter taken from the following table.

Approximate zone	Description	Letter	Approximate zone	Description	Letter
7½ W to 7½ E	0	Z	7½ W to 22½ W	+ 1	N
7½ E to 22½ E	— 1	A	22½ W to 37½ W	+ 2	O
22½ E to 37½ E	— 2	B	37½ W to 52½ W	+ 3	P
37½ E to 52½ E	— 3	C	52½ W to 67½ W	+ 4	Q
52½ E to 67½ E	— 4	D	67½ W to 82½ W	+ 5	R
67½ E to 82½ E	— 5	E	82½ W to 97½ W	+ 6	S
82½ E to 97½ E	— 6	F	97½ W to 112½ W	+ 7	T
97½ E to 112½ E	— 7	G	112½ W to 127½ W	+ 8	U
112½ E to 127½ E	— 8	H	127½ W to 142½ W	+ 9	V
127½ E to 142½ E	— 9	I	142½ W to 157½ W	+10	W
142½ E to 157½ E	—10	K	157½ W to 172½ W	+11	X
157½ E to 172½ E	—11	L	172½ W to 180	+12	Y
172½ E to 180	—12	M			

### Notes:

1. 0002Q means 0002 hours, zone Q time.
2. 1301Z means 1301 hours, GCT.
3. 240005P means 0005 hours of the 24th day of the month, zone P time.
4. 011312Z means 1312 hours of the 1st day of the month, zone GCT.

b. The designation letter indicates the correction (see "descriptions" in preceding table) which may be applied to the time as expressed in order to change it to Greenwich Civil Time (GCT). Greenwich Civil Time is denoted by the letter Z.

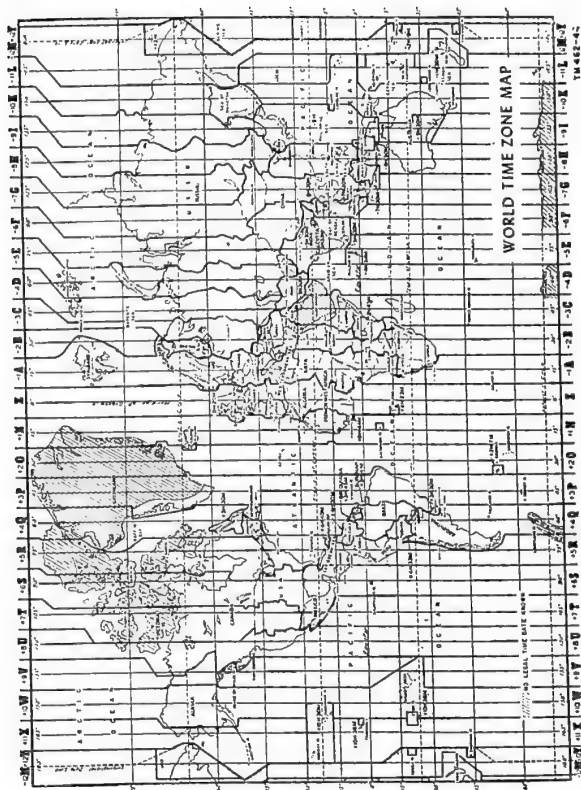


Figure 1. Time zone chart.

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### *Example*

Washington is in longitude zone  $67\frac{1}{2}^{\circ}$  to  $82\frac{1}{2}^{\circ}$ W. If that city keeps normal zone time (zone description—5), the date-time group designation letter will be R. To convert to GCT, add 5 hours to the indicated time.

If Washington keeps daylight saving time (zone description—4), the designation letter will be Q. To convert to GCT, add 4 hours to the indicated time.

c. The zone designation letter does not necessarily locate geographically the originator of a message. It indicates only what time was meant in the date-time or time group used. The zone time to be used at any particular location is prescribed by the appropriate commander.

d. For further information on time see JANAP 121(A).

## **29. Time of Origin**

The time of origin is the time at which the originator releases the message for transmission. The time of origin is the time used in the date-time group of a message.

## CHAPTER 3

# ORGANIZATION OF RADIO NETS

---

### 30. General

a. Field radio stations are grouped into separate nets of a few stations each. Each net is assigned one or more definite frequencies. Normally all operations are confined to communications within the individual nets. For purposes of control, one station, usually the one located at the highest headquarters, is appointed as the net control stations.

b. The radio organization chart (fig. 2) illustrates call signs of individual stations, the net call signs of the various nets, the net control station of each net, and the channels of communication. Most of the examples in this manual are based on this chart.

### 31. Duties of Net Control Station

a. The NCS is charged with the clearing of traffic within the net, the dispatching internet traffic as quickly as possible, and with maintaining order within the net. Questions concerning traffic are referred to the NCS for decision. The authority of the NCS extends only to the operation of the net and its discipline on the air and is in no way concerned with the internal administration of any station nor with its tactical operation or movement. Within its scope, however, the authority of the NCS is absolute; its decisions are final, and its orders will be strictly obeyed.

b. An acting or alternate NCS (NC2) is appointed by the regular NCS when the latter temporarily leaves the net. When the NCS is out of action or leaves the net without appointing an NC2, the next senior station automatically takes charge of the net. The NC2, in the absence of the NCS, has the same duties, responsibilities, and authority as the NCS. The operating signals ZKA, meaning, "I am NCS on this frequency," and ZKD, meaning, "Take control of net" may be used in announcing and appointing an NCS or NC2.

#### *Examples*

- (1) M2D, the regular NCS, orders 2NW to take charge of the net.

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2NW DE M2D ZKD K

M2D DE 2NW R AR (2NW answers)

M2D then leaves the net. 2NW may, if necessary, call the remaining stations of the net and announce that he is NCS.

YJM DE 2NW ZKA K

The remaining stations of the net receipt in proper order.

- (2) M2D notifies all stations of the net that 2NW is to take charge of the net.

YJM DE M2D 2NW ZKD K

All stations receipt in proper order.

## **32. Establishing a Net**

a. Assume that radio nets are about to go into operation in a tactical situation. The 55H net (fig. 2) will be used as an example. The operators are informed of their call signs and their frequency and of the time when complete communication within the net is expected. They know that XP5 is to be the net control station. All this information, together with other pertinent instructions, appears in the SOI issued to the units concerned.

b. Transmissions must be kept to a minimum in establishing a net. Preliminary adjustments of transmitter and receiver to the net frequency should be accomplished without emission of radio signals. Prior to the opening of the net, stations may contact other stations only for the purpose of handling message traffic, unless there are instructions to the contrary. A net is opened by the NCS, who will make a preliminary call, collectively, to all stations on the net. He may follow this call with several V's and end with prosign AR, during which time all stations shall adjust their receivers to zero-beat with that of the NCS signal and tune their transmitters to zero-beat their own receivers. (These actions should be accomplished quickly; practice is essential.) Initial checks by all stations on the first transmission of the NCS are necessary to assure efficient operation on the circuit. The NCS will make further calls, collectively, as described below, and determine whether any station must make further adjustments.

c. Each station listens on the assigned frequency before calling. Assume that the NCS (XP5) makes the first transmission as follows:

55H DE XP5 K

The transmission would be the first entry in the log in the space provided for traffic. The time the transmission was made should

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also be entered. The stations would answer in proper order as follows:

XP5 DE BE6 K  
XP5 DE FAR K  
XP5 DE P7Z K

Assuming there is no traffic awaiting transmission by any station in the net, the NCS receipts for the above answer as follows:

55H DE XP5 R AR

d. When communication is difficult during the establishment of a net or when sufficient interference warrants, the call signs may be transmitted twice in the call.

### *Example*

55H 55H DE XP5 XP5 K (XP5 calls)  
XP5 XP5 DE BE6 BE6 K (BE6 answers)  
XP5 XP5 DE FAR FAR K (FAR answers)  
XP5 XP5 DE P7Z P7Z K (P7Z answers)  
55H DE XP5 R AR (XP5 answers)

e. If, for example, FAR had traffic for XP5, instead of answering as shown in c above, he would have answered as follows:

XP5 DE FAR B K

The prosign B means, "More to follow," and indicates that FAR has traffic for XP5. In this case, after all subordinate stations have answered, XP5 receipts as follows, telling FAR to go ahead:

55H DE XP5 R FAR K

f. At this point, there may be some question as to why all stations in the net do not communicate with one another and send signal strength and readability reports. The reason for this is that all superfluous transmissions must be eliminated and radio operators must be trained in net discipline in order to comply strictly with communication procedures. Readability reports should not be exchanged when communication is good. When a station's signal strength and readability falls below the average of other stations in the net, it is the responsibility of the NCS to call that station and direct him to retune his transmitter. In so doing, the NCS must take into consideration the approximate distance of the station (if known), the terrain, the atmospheric conditions, and other factors. In the examples above, since all subordinate stations in the net answered in proper order, it may be assumed that each station can hear every other station.

g. The radio operator must always remember and obey the following rules concerning transmitter tuning:

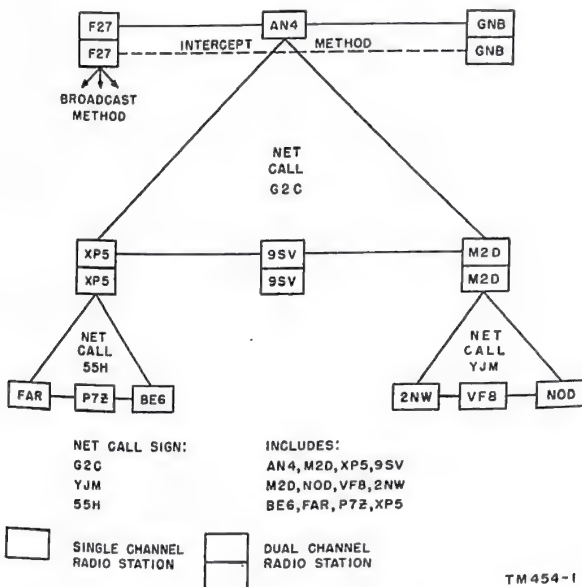
- (1) The NCS is responsible for having his transmitter accurately tuned to the assigned frequency.



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- (2) Each subordinate station must tune accurately to the frequency transmitted by the NCS, even if the tuning of the NCS is inaccurate. If a subordinate station detects an inaccuracy in the frequency transmitted by the NCS, that station should notify the NCS of that fact by use of the proper operating signal.
- (3) The NCS is responsible for insuring that each station in the net has its transmitter properly tuned.

TYPICAL NET DIAGRAM USED AS BASIS FOR  
MAJORITY OF EXAMPLES SHOWN IN THIS MANUAL



TM 454-1

Figure 2. Radio organization chart.

## 33. Controlling the Net

a. After the net is organized, the usual practice is that any station may transmit traffic to any other station without obtaining permission from the NCS. A net operating in this manner is called a *free net*.

b. When traffic conditions warrant, the NCS may order any or all subordinate stations to obtain permission of the station(s)

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concerned before transmitting traffic to such station(s). To do this, the NCS uses the operating signal ZBH, meaning, "Make preliminary call before transmitting traffic." Each station will henceforth transmit a preliminary call to the station concerned before passing traffic.

### *Example*

YJM DE M2D ZBH K

All stations receipt in proper order.

c. When traffic is heavy in the net, the NCS may limit the transmission of traffic to messages of high precedence only, by using the operating signal ZAN, meaning, "Transmit only messages of and above precedence \_\_\_\_\_," followed by the appropriate precedence sign.

### *Example*

AN4 orders his net to transmit only messages having the precedence *priority* or higher:

G2C DE AN4 ZAN P K

Later AN4 cancels the above order. He does so by using the operating signal ZUG, meaning, "Negative."

G2C DE AN4 ZAN P ZUG K

d. If traffic is not being handled properly, or if stations within the net fail to wait their proper turn to transmit their traffic according to the rules governing the precedence of messages, the NCS will call any station concerned and order the station to wait by using the prosign AS. Any station thus ordered to wait must not transmit until the NCS gives permission.

### *Examples*

M2D silences the rest of his net in order to let NOD pass traffic:

YJM DE M2D AS NOD K

M2D orders VF8 to wait:

VF8 DE M2D AS AR

e. If the NCS is unable to maintain proper net discipline by the means indicated in *b* and *c* above, he may order any or all subordinate stations to obtain his permission before transmitting traffic to any station in the net. To do this, the NCS uses the operating signal ZKB, meaning, "It is necessary to obtain permission of the NCS before transmitting messages."

### *Example*

YJM DE M2D ZKB K

Permission to transmit may now be requested and granted or refused by use of the following operating signals: ZUE, meaning, "Affirmative" or "Yes," and ZUG, meaning, "Negative" or "No."

*Example*

M2D DE 2NW 2P NOD K (2NW asks permission to send 2 priority messages to NOD).

If 2NW had two messages, one priority and the other deferred, the example would then read:

M2D DE 2NW ZBO 1P 1NM NOD K (2NW asks permission to send one priority and one deferred message to NOD).

A net operated in this manner is called a *directed net*.

f. Operators always must bear in mind that the NCS is the controlling station, and that subordinate stations will strictly obey orders of the NCS concerning net operation and traffic handling. Any operator disregarding the orders of the NCS will be reported by the NCS to the proper authority, and disciplinary action will be taken.

### 34. Leaving the Net

a. Normally, no station should leave the net without obtaining permission from the NCS. Stations will not leave the net to communicate with stations in a different net except in extreme emergencies, but will transmit their traffic to the NCS, who will relay such traffic to the addressee(s). Assume that FAR, a subordinate station in the 55H net, has a message for 2NW, a subordinate station in the YJM net. FAR should transmit his message to his NCS, XP5, who will then transmit the message to M2D by means of the G2C net. M2D in turn will retransmit the message to 2NW in the YJM net.

b. Assume for example, that an extreme emergency has arisen. FAR has a message for 2NW of precedence *emergency*. FAR desires to leave his net temporarily to report into the YJM net and send his message direct to 2NW. He would call XP5 and indicate his intention to leave the net by using the operating signal ZKF, meaning, "Station leaves net temporarily to communicate with \_\_\_\_\_"

*Example*

XP5 DE FAR ZKF 2NW K

It should be understood that if the NCS merely receipts for the foregoing transmission, it does not imply that FAR has permission to leave the net. If XP5 wishes to give FAR permission to leave the net, he will use the operating signal ZUE, meaning "Yes." If XP5 does not wish FAR to leave the net, he should use the operating signal ZUG, meaning, "No," followed by the operating signal ZOE, meaning, "Give me your message. I will dispose of it."

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### *Examples*

FAR DE XP5 ZUE AR (XP5 gives FAR permission to leave the net)  
FAR DE XP5 ZUG ZOE K (XP5 refuses permission to leave the net, and says he will relay the message)

c. Assume that XP5 gives FAR permission to leave the net. Before transmitting his message to 2NW in the YJM net, FAR should tune his receiver to the YJM frequency, tuning slightly to both sides of the net frequency to make sure he hears any station of the net which may be transmitting. If no traffic of precedence "emergency" or higher is being handled in the YJM net, FAR should tune his transmitter to the YJM frequency, call the NCS of that net, and request permission to transmit to 2NW.

### *Example*

M2D DE FAR ZBO O 2NW K (Request)  
FAR DE M2D K (M2D replies, giving permission)

d. If 2NW, listening, heard the above transmissions, he in turn could immediately call FAR and transmit K, inviting FAR to transmit and making a preliminary call from FAR unnecessary. After FAR transmits his message, he would report back into his proper net.

## 35. Frequency Adjustments

a. Assume that FAR in reporting back into his own net, transmitted:

XP5 DE FAR K

b. XP5 determines that FAR's frequency is 3 kilocycles too high. Instead of simply giving FAR a receipt for the above transmission, XP5, the NCS, should use the operating signal ZRA2, meaning, "Your frequency is slightly (or \_\_\_\_\_kc) high," as follows:

FAR DE XP5 ZRA2 3 K

c. Immediately, without receipting for the above transmission, FAR should retune his transmitter to approximately 3 kilocycles below its present setting. After FAR has lowered his frequency, he should again call his NCS, using the operating signal ZRA preceded by the prosign INT to form a question, meaning, "How does my frequency check?" as follows:

XP5 DE FAR INT ZAR K

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d. Assume that the NCS determines FAR's frequency to be 3 kilocycles too low now. The NCS will use the operating signal ZRA3, meaning "Your frequency is slightly (or\_\_\_\_\_kc) low," as follows:

FAR DE XP5 ZRA3 3 K

e. Again FAR retunes his transmitter. (He should use a transmitter setting about halfway between the settings which were 3 kilocycles high and 3 kilocycles low.) After retuning, FAR should again call XP5 as follows:

XP5 DE FAR INT ZRA K

f. Assuming that FAR's frequency is now correct, XP5 will use the operating signal ZRA1, meaning, "Your frequency is correct," as follows:

FAR DE XP5 ZRA1 AR

### 36. Closing Station

a. When the tactical situation demands, and when it is desired to keep the enemy in ignorance as to when stations leave the net or when a net is being closed, such information should be contained in the text of a regular encrypted message.

b. When directed by proper authority, the NCS will give the order to close the net or close individual stations by using the operating signal ZKJ1, meaning, "Close down."

#### *Examples*

55H DE XP5 ZKJ1 K (XP5 orders his net to close)

BE6 DE XP5 ZKJ1 K (XP5 orders BE6 to close station)

Upon receiving the order to close station, the station(s) concerned will receipt in proper order before closing.

c. A station desiring to close down will obtain permission (except in extreme emergency) from the NCS by using the operating signal ZKJ2 preceded by INT, meaning, "May I close down?" as follows:

#### *Example*

XP5 DE BE6 INT ZKJ2 K (BE6 asks permission to close down)

BE6 DE XP5 ZUE AR (XP5 gives permission to close down)

## CHAPTER 4

### MESSAGES

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#### Section I. BASIC RADIOTELEGRAPH MESSAGE FORM

##### 37. General

a. This section defines the Basic Radiotelegraph Message Form. Except when commercial or ICAO (International Civil Aviation Organization) form is authorized, every message handled by radiotelegraph will be prepared in one of the three following subforms: plaindress, abbreviated plaindress, and codress. These three forms are created by selecting certain elements of the basic form. Plaindress, abbreviated plaindress, and codress messages are explained in paragraphs 59 through 64.

b. Every message prepared in plaindress, abbreviated plaindress, or codress will have three *parts*:

- (1) Heading.
- (2) Text.
- (3) Ending.

c. Each message *part* has certain *components*, which in turn are broken down into *elements* and *contents*. As indicated in *a* above, not every message will contain all elements of the basic form. However, these elements that do appear in any message must be in the sequence shown in the basic form.

##### 38. Diagram

a. In the following diagram, every *element* is shown in the order of its appearance in the message, but the *contents* of the *elements* may vary.

b. Routing indicators and address groups are combinations of letters which are similar in purpose and use to call signs. (See JANAP 121(A).) Routing indicators and address groups may appear in messages as shown in paragraph 39. The former may be used only if the radiotelegraph circuit concerned serves as part of a tape relay network.

c. In some cases, plain language may be used in lines 4, 6, 7, 8, and 9.

d. In various examples given in this manual, it will be seen that *elements* shown in the diagram as being contained in one line may in some cases occupy two or more lines in the actual typed message. Similarly, two or more *elements* may appear in one line in the actual message. The examples show the approved practice.

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## The Basic Radiotelegraph Message Form

Parts	Components	Elements	Format Line	Contents
H E A D I N G	Procedure	a. Handling instructions.	1	Not used in radiotelegraph procedure.
		b. Call	2 & 3	Station(s) called (prosign XMT, exempted calls). Prosign DE and station calling. Station serial number.
		c. Transmission Identification.		
		d. Transmission Instructions.	4	Prosign T; G F; Operating Signals; Call signs, Address Groups, address indicating groups, plain language, routing indicators.
	Preamble	Precedence; date time group; message instructions.	5	Precedence prosign; date and time expressed in digits, and zone suffix; operating signals.
	Address	a. Originator's sign; Originator.	6	Prosign FM; Originator's designation. (Address group, call sign, plain language.)
		b. Action Addressee sign, action addressee.	7	Prosign TO; action addressee designation. (Address groups, call signs, plain language, routing indicators.)
		c. Information addressee sign; information addressee.	8	Prosign INFO; information addressee designation. (Address groups, call signs, plain language, routing indicators.)
		d. Exempted addressee sign; exempted addressee.	9	Prosign XMT; exempted addressee designation. (Address groups, call signs, plain language.)
	Prefix	Accounting information; group count; SVC.	10	Accounting symbol; group count; SVC.



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Parts	Components	Elements	Format Line	Contents
SEPARATION			11	Prosign $\overline{BT}$
T E X T	Text	Subject Matter	12	Internal instructions; basic idea of the originator. (Assume a single line text.)
SEPARATION			13	Prosign $\overline{BT}$
E N D I N G	Procedure	a. Time group	14	Hours and minutes expressed in digits and zone suffix, when appropriate.*
		b. Final Instructions	15	Prosigns B; $\overline{AS}$ ; C; Operating Signals.
		c. Ending sign	16	Prosign K; $\overline{AR}$

\* Used only in abbreviated plaintext form message (par. 61).

*Note.* The above radiotelegraph message form is derived from the basic military message format prescribed for all means of communication by JANAP 123(A). In radiotelegraph procedure, the line labeled 2 & 3 is, in effect, the first line.

## 39. Example

a. The following is an example of a message containing most of the elements and contents shown in the preceding diagram. Most radiotelegraph messages are less complex than the following, but it will serve to illustrate the scope of the basic radiotelegraph message form.

### Example

G2C—XMT—9SV DE AN4 NR17—

XP5—T—FAR—

P—R—191803Z—ZFF—

FM AN4—

TO XP5

FAR—

INFO M2D—

WD—GR16

$\overline{BT}$

KYGRX NGUYE LMUYE GRDSA CHYUI MKOIU VFDRE

DFGHJ DEWYK HTEQW LPOUT VFERS XBNMH XASER

BGYTU XAERT

$\overline{BT}$

B M2D K

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b. The message in *a* above may be interpreted as follows: It was originated at 191803Z by AN4, who intended it to go to XP5, and FAR for action and to M2D for information; AN4 gave the message precedences of *priority* and *routine*, respectively, for the action information addressees. The operating signal ZFF indicates that AN4 wishes to be informed when the message has been delivered to the addressees. AN4 instructs XP5 to relay the message to FAR. The station serial number indicates this is AN4's 17th message of the day to G2C. The message has 16 groups and carries the accounting symbol WD. By use of the prosign B, AN4 indicates he has more traffic for M2D. The prosign K means that AN4 expects M2D and XP5 to receipt for the message.

## Section II. EXPLANATION OF MESSAGE ELEMENTS

### 40. Call

The call is composed of the call sign of the station called, the prosign XMT and exempted call signs, as needed, the prosign DE, and the call sign of the calling station.

### 41. Transmission Identification

The transmission identification is the station serial number. The use of the station serial number is optional. See paragraph 25.

### 42. Transmission Instructions

Depending on the circumstances, it may be necessary for the calling station to instruct the station called to relay a message, to repeat back a message, to remain silent, or to take some other special action. To convey these instructions, the calling station uses the proper prosigns, operating signals, and station designations. Specific routing and relay instructions, when intercepted, are very useful to enemy radio intelligence units, since they reveal administrative and tactical organizations. Therefore, the use of such instructions should be avoided whenever practicable.

### 43. Precedence

a. Messages are assigned a precedence to show the relative order in which they are to be transmitted and dealt with. Messages of the same precedence are handled in order of filing for transmission, or in order of receipt for relay.

b. The assignment of precedence to a message is the respon-

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sibility of the originator and is determined by the subject matter of the text and the time factor involved.

c. Message precedence is indicated as follows:

<i>Precedence</i>	<i>Prosign</i>	<i>Degree of Precedence</i>
Flash	OC	Highest
Emergency	O	Second
Operational		
Immediate	OP	Third
Priority	P	Fourth
Routine	R	Fifth
Deferred	NM	Lowest

The accompanying chart shows the meaning and rapidity of processing associated with the precedence prosigns.

*Precedence of Messages*

<i>Prosign</i>	<i>Meaning</i>	<i>Rapidity of processing</i>
OC	FLASH: Reserved for initial enemy contact reports or special emergency operational-combat traffic originated by specifically designated high commanders or by operational commanders of units directly affected. Flash messages will be SHORT reports of emergency situations of vital importance.	FLASH messages will be hand carried, processed, transmitted, and delivered in the order received and ahead of all messages of lower precedence. Messages of lower precedence will be interrupted on all circuits involved until handling of the FLASH message is completed.
O	EMERGENCY: Reserved for amplifying reports of initial enemy contact, for messages required in situations of emergency which involve tactical action, and in situations which gravely affect national security, or concerning distress, which demand immediate delivery to the addressee.	EMERGENCY messages are processed, transmitted, and delivered in the order received and ahead of all messages of lower precedence. Processing and transmission of lower precedence messages will be interrupted to speed the handling of EMERGENCY messages.
OP	OPERATIONAL IMMEDIATE: Reserved for important tactical messages pertaining to the operations in progress, or for important administrative messages having an immediate bearing on tactical operations; and, when necessary, for messages concerning the immediate movement of ships, aircraft, or ground forces. This precedence is to be used only when the value of a message is dependent upon expeditious delivery to the addressee.	OPERATIONAL IMMEDIATE messages are processed, transmitted, and delivered in the order received and ahead of all messages of lower precedence. Processing and transmission of lower precedence messages will be interrupted to speed the handling of OPERATIONAL IMMEDIATE messages.

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Prosign	Meaning	Rapidity of processing
P	<b>PRIORITY:</b> Reserved for important messages which must have precedence over routine traffic. This is the highest precedence which normally may be assigned to messages of an administrative nature.	PRIORITY messages are processed, transmitted, and delivered in the order received and ahead of all messages of lower precedence. ROUTINE messages being transmitted should not be interrupted unless they are unusually long.
R	<b>ROUTINE:</b> Reserved for all types of messages which are not of sufficient urgency to justify a higher precedence, but must be delivered to the addressee without delay.	ROUTINE messages are processed, transmitted, and delivered in the order received and after all messages of higher precedence.
NM	<b>DEFERRED:</b> To be employed for all types of messages which justify transmission by rapid means, but which will permit the delay necessary for prior transmission of messages of higher precedence.	DEFERRED messages are processed, transmitted, and delivered in such order as will clear traffic with due regard for messages of higher precedence.

d. If a message having no designated precedence is handed to an operator for transmission, the operator should normally check with the originator or message center to determine the precedence.

e. A multiple address message must have the same precedence for all action addressees and the same precedence for all information addressees. A message may have a lower precedence for the information addressees than for the action addressees; in this case, two precedence prosigns appear in the heading, the first indicating the precedence for the action addressees, the second indicating the precedence for the information addressees.

## Examples

- (1) Single address message, routine precedence:

FAR DE XP5 (call serves as address)  
R—181725K  
GR92  
BT  
Etc.

- (2) Multiple address message, for action to all addressees, emergency precedence:

NOD VF8 DE M2D (call serves as address)  
O—161350I  
GR28  
BT  
Etc.

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- (3) Multiple address message with transmission instructions, priority precedence to action addressees, routine precedence to information addressees:

G2C XMT 9SV DE AN4 NR17  
M2D T 2NW  
P—R—112345Z  
FM AN4  
TO M2D  
2NW  
INFO XP5  
GR 49  
BT  
Etc.

- (4) Multiple address message, deferred precedence to action and information addressees:

M2D XP5 9SV DE AN4  
NM—241905B  
FM AN4  
TO 9SV  
INFO M2D  
XP5  
GR87  
BT  
Etc.

*f.* Message precedence may be indicated in a preliminary call. See paragraph 75.

### 44. Date-Time Group

The date-time group indicates the time of origin of the message. See paragraph 29.

### 45. Message Instructions

It may be necessary to transmit special instructions or information concerning the message. This is done by using appropriate operating signals. For example, the operating signal ZEN, meaning, "This message has been delivered by other means to the addressees immediately following this operating signal," might be used.

### 46. Originator

*a.* The originator is the commanding officer by whose authority a message is sent. The originator is responsible for the functions of the drafter and releasing officer.

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b. The drafter is the person who actually composes a message for release by the originator or releasing officer.

c. The releasing officer is a properly designated person who may authorize the transmission of a message for and in the name of the originator.

d. The headquarters of the originator is indicated by the call sign or other designation following the prosign FM. The identity of the drafter or releasing officer may be shown in the text of the message, if the originator so prescribes.

### **47. Action Addressee**

Action addressees are persons who are expected to take action based on the text of a message. Action addressee(s) is indicated by the call sign(s) or other designation following the prosign TO. A call sign following the prosign TO is usually assumed to address the message to the commanding officer of the headquarters represented by the call sign; however, a specific addressee other than the commanding officer may be designated in the text. When there are only information addressees, TO is omitted.

### **48. Information Addressee**

Information addressees are persons who need the information contained in the text of a message, but who are not expected to take action based on the message. Information addressee(s) is indicated by the call signal(s) or other designation following the prosign INFO. A call sign following the prosign INFO is usually assumed to address the message to the commanding officer of the headquarters represented by the call sign; however, a specific addressee other than the commanding officer may be designated in the text. When there are only action addressees, INFO is omitted.

### **49. Exempted Addressee**

If a collective call sign is used to indicate action or information addressees, it may be necessary to exempt certain stations from receiving the message. To do this, prosign XMT, followed by appropriate call signs or other designation, is used.

### **50. Accounting Information**

Accounting information, if included in a message, consists of an accounting symbol. An accounting symbol is a group of letters used to identify the agency which is financially accountable for the message.

## 51. Group Count

a. The group count, when included in a message, has two purposes: to assist the communication centers and radio stations involved in ascertaining whether any words or groups have been inadvertently lost from the message, and for use, when applicable, in determining volume of traffic.

b. The group count should be included in messages whenever message length, volume of traffic, transmission conditions, or other factors make it likely that groups will be lost and/or when such loss may have tactical or administrative importance.

c. Encrypted messages must always indicate a numerical group count. A group count or GRNC (par. 70n) must be included when an accounting symbol is used.

d. Groups are counted in accordance with the following rules:

- (1) Count only the groups or words between BT and BT, that is, the text groups.
- (2) Punctuations are not counted unless spelled out or abbreviated.
- (3) A hyphenated word or a sequence of characters not interrupted by a space is counted as one group.
- (4) The letter X, when used in lieu of punctuation, is counted as one group.
- (5) The proper names of countries, cities, or streets consisting of two or more separate words should normally be written and counted as one group, for example: San-Salvador, SanDiego, SaltLakeCity. When written separately they will be transmitted and counted as separate groups, for example: Fifth Avenue.

### *Examples*

The following text is counted as 29 groups:

SHIPMENT BRAY HYPHEN CORBIE SHOULD HAVE  
BEEN MARKED BRAY-CORBIE PERIOD FUTURE SHIP-  
MENTS FOR PAREN FRANCE PAREN SHOULD BE  
MARKED /FRANCE/ PERIOD CREDIT MR D F JOHN-  
SON SYMBOL 125— $\frac{3}{4}$ —55—X4.8 PERIOD

The following text is counted as 13 groups:

VFEDY NJGYT CVGRI OPUYT NFTRD VFGHN MHRSA  
VCGYJ MKUHT XDFCV HYFTR MKUGX ZVNMT

## 52. SVC

The symbol SVC is used to identify service messages.

## 53. Prosign BT

This prosign is used to separate the heading from the text.

## 54. Text

The text contains the idea or information which the originator desires to transmit to the addressees. In addition, the text may contain internal transmission or message instructions. The text may be in plain language or may be encrypted. A plain language text may contain code words or code combinations, in which case it is known as modified clear text.

## 55. Prosign $\overline{BT}$

This prosign is used to separate the text from the ending.

## 56. Time Group

The time group does not appear in the ending of a plaindress message. It is optional in an abbreviated plaindress message, when no date-time group or time group is placed in the heading. The time group consists of four figures and a zone letter.

## 57. Final Instructions

The prosign B,  $\overline{AS}$ , and C appear, when needed, in the final instructions. In addition, this element may include operating signals; for example, ZNB, meaning, "Authentication is \_\_\_\_\_," might be transmitted.

## 58. Ending Sign

Every message ends with the prosign K or  $\overline{AR}$ .

# Section III. TYPES OF MESSAGES

## 59. General

a. Messages transmitted over military radiotelegraph circuits are prepared in plaindress, abbreviated plaindress, or codress form except when commercial or ICAO form is authorized.

b. The primary difference between the two plaindress forms and codress form is that the originator and addressees are shown in the headings of the plaindress forms, whereas the identities of the originator and addressees are concealed in the encrypted text in the codress form.

c. Procedure and service messages may be prepared in plaindress, abbreviated plaindress, or codress form. In origin and purpose, procedure and service messages are entirely different from ordinary tactical and administrative messages; consequently, procedure and service messages are considered separately in this section.



## 60. Plaindress Messages

a. Except as explained in *b* below, a plaindress message contains the following items, used as indicated:

<i>Item</i>	<i>Use</i>
(1) Call	Always included.
(2) Station serial number	Used when needed (see paragraph 25).
(3) Transmission instructions	Used when needed.
(4) Precedence, date-time group	Always included.
Message instructions	Used when needed.
(5) Prosign FM, originator	Always included.
(6) Prosign TO, action addressees	Always included, when there are action addressees.
(7) Prosign INFO, information addressees	Always included, when there are information addressees.
(8) Prosign XMT, exempted addressees	Used when needed.
(9) Accounting symbol	Used when needed.
Group count	Used when needed; always included if accounting symbol is used (see paragraph 51b).
SVC	May be used in service messages.
(10) Prosign <u>BT</u>	Always included.
(11) Text	May be plain language or encrypted.
(12) Prosign <u>BT</u>	Always included.
(13) Final instructions	Used when needed.
(14) Ending sign K or AR	Always included.

### *Example*

VF8 2NW DE M2D NR4—  
R—141625Z—  
FM AN4—  
TO M2D  
TNW—  
INFO VF8—  
GR77  
BT  
Text  
BT  
K

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b. Call serving as address: In plaindress messages when the originator is in direct communication with the addressees, the call may serve as the address. In this case, items (5) through (8), as listed in *a* above, may be omitted.

### *Examples*

- (1) When all addressees are action addressees:

FAR P7Z DE XP5—  
P—221950Z  
BT  
Text  
BT  
K

- (2) When there are both action and information addressees, in addition to being in the call, the information addressees must be indicated by the operating signal ZFH2 followed by the station designations of the information addressees:

NOD VF8 DE M2D—  
ZFH2 VF8—  
P—R—121235K  
GR118  
BT  
Text  
BT  
K

- (3) When all addressees are information addressees, this is indicated by the inclusion of the operating signal ZFH2 with no station designations following:

G2C DE AN4 NR54—  
ZFH2—  
R—192005Z  
GR46  
BT  
Text  
BT  
K

## 61. Abbreviated Plaindress Messages

a. When speed of transmission is important, such as in enemy contact reports, tactical messages, and short messages from aircraft, the precedence and/or date-time group may be omitted from message headings; such messages are said to be in abbreviated plaindress form.

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b. When the originator and addressees are in direct contact and the abbreviated plaindress form is used, only the following elements are required:

- (1) Call.
- (2) Prosign BT.
- (3) Text.
- (4) Prosign BT.
- (5) Ending sign K or AR.

## Example

M2D DE NOD  
BT  
 Text  
BT  
 K

c. The following items may be included when needed in the abbreviated plaindress form; when used, they will appear in the same sequence as shown in the basic message form:

<i>Item</i>	<i>Typical use</i>
Station serial number	Not normally used.
Transmission instructions.	Used when message must be relayed.
Precedence	Used when needed to insure rapid handling.
Date-time group	Not normally used. See time group below.
Message intructions	Not normally used.
Prosign FM, originator.	Used when message must be relayed.
Prosign TO, action addressees.	Used when message must be relayed.
Prosign INFO, information addressees.	Used when message must be relayed.
Prosign XMT, exempted addressees.	Used when needed.
Group count	Used when needed (see par. 51b).
Time group	Four digit time group followed by zone letter may be used when needed to indicate time of origin—may appear either in preamble or message ending. Used in contact reports, etc.
Final instructions	Used when needed.

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### *Example*

XP5 DE AN4—  
T—FAR—  
O—  
FM AN4—  
TO XP5  
FAR—  
GR11  
BT  
Text  
BT  
K

d. When the originator and addressees are in direct contact and some or all of the addressees are information addressees, the operating signal ZFH2 may be used as in paragraph 60b.

### *Example*

M2D 9SV DE AN4—  
ZFH2 9SV—  
GR21  
BT  
Text  
BT  
K

## 62. Codress Messages

a. A codress message is one in which the entire address component is omitted from the heading and the identities of the originator and all addressees are concealed in the encrypted text. The encrypted text may also contain additional message routing instructions.

b. A codress message consists only of the following items, used as indicated:

<i>Item</i>	<i>Use</i>
(1) The call	Always included.
(2) Station serial number	Used when needed.
(3) Transmission instructions	Used when needed.
(4) Precedence, date-time group	Always included.
(5) Message instructions	Used when needed.
(6) Group count	Always included.
(7) Prosign <u>BT</u>	Always included.
(8) Encrypted text	
(9) Prosign <u>BT</u>	Always included.
(10) Final instructions	Used when needed.
(11) Ending sign K or <u>AR</u>	Always included.

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c. When a codress message is sent to a station which is required to relay the message and also to decrypt the message, the call sign of that station must be included in the transmission instructions.

*Examples*

- (1) Direct communication with one addressee:

BE6 DE XP5 NR27—  
P—231456Z  
GR75  
BT  
Text  
BT  
K

- (2) One station called; it is to relay the message:

M2D DE AN4—  
T—VF8—  
OP—071515K  
GR31  
BT  
Text  
BT  
K

- (3) One station called; it is to relay and also decrypt the message:

XP5 DE AN4—  
T—P7Z XP5  
R—161145A  
GR69  
BT  
Text  
BT  
K

- (4) Two stations called; one is to decrypt, the other is to relay without decrypting:

M2D VF8 DE NOD  
M2D—T—AN4—  
P—132235Z  
GR17  
BT  
Text  
BT  
K

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- (5) Two stations called; both to decrypt and one is also to relay:

XP5 9SV DE AN4  
XP5—T—FAR XP5—  
R—310255Z  
GR36  
BT  
Text  
BT  
K

### 63. Procedure Messages

A procedure message is one in which the text contains only prosigns, operating signals, call signs, identification of messages, parts of messages, and amplifying data as necessary. A procedure message may contain any of the elements shown in the basic message form, except that:

a. The prosign BT is used only if the date-time group is included in the heading.

b. The date-time group is included in the heading only when it is necessary to indicate the time at which the message was originated or when it is considered that further reference may be made to the message.

#### *Examples*

- (1) AN4 orders his net to change frequency to 4,210 kc:

G2C DE AN4  
QSY 4210 K

- (2) AN4 relays a procedure message through M2D to order NOD to report the disposal of message having time or origin 172355K:

M2D DE AN4  
T—NOD  
ZDN 172355K K

### 64. Service Messages

a. A service message is one between communications personnel pertaining to any phase of traffic handling, communication facilities, or circuit conditions.

b. Service messages are prepared and transmitted as ordinary plaindress, abbreviated plaindress, or codress messages. When a service message refers to another message, it normally will be assigned a precedence equal to that of the other message. An encrypted service message will always carry a group count.

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c. Plain language service messages are identified by one or more of the following:

- (1) Reference to another service message.
- (2) The abbreviation SVC in the prefix.
- (3) The abbreviation SVC as the first word of the text.
- (4) Specifically addressed to communication center personnel.

## Section IV. MESSAGE COMPOSITION

### 65. Numbers

a. Numbers in date-time groups, station serial numbers, call signs, and those used with operating signals and prosigns are written and transmitted as digits.

b. In the message text, numbers may be written as digits or spelled out. When spelled out, they are expressed by using a word for each digit, except that for even hundreds and thousands the words HUNDRED and THOUSAND are used. Messages to be encrypted should have numbers spelled out. Cardinal numbers rather than ordinal numbers are used whenever practicable; that is, TWO ONE instead of 21st.

### 66. Punctuation

Punctuation is not used unless it is necessary to the sense of the message. When it is considered essential to use punctuation, the abbreviations listed below are used. The letter X may be used in lieu of punctuation whenever exact punctuation is not considered essential but some separation in the text is necessary for clarity, and the use of X is not ambiguous to the text. The phonetic letter XRAY will not be used for this purpose. The following punctuation is authorized and is abbreviated as indicated below:

<i>Punctuation</i>	<i>Abbreviation</i>
Period.....	PD
Comma.....	CMM
Colon.....	CLN
Semicolon.....	SMCLN
Parentheses.....	PAREN
Question Mark.....	QUES
Decimal Point.....	PNT
Paragraph.....	PAR
Dash.....	DASH
Fraction Bar.....	SLANT
Quotation Marks.....	QUOTE—UNQUOTE

## 67. False Messages

It is a criminal offense to knowingly and willfully send a false or forged message by any agency of signal communication, or deliver or cause to be delivered to any person a message falsely purporting to have been received by an agency of signal communication. See AR 105-40.

## Section V. PROSIGNS

### 68. General

Prosigns are letters and groups of letters used to facilitate communication by conveying in condensed standard form certain frequently used orders, instructions, requests, and information relating to communication.

### 69. List of Prosigns

Below is the complete list of prosigns which are authorized for use on military radiotelegraph circuits. No others may be used. An overscore (a line over two or more letters) indicates that the letters overscored are to be transmitted as a single character, that is, without pause between letters. Paragraph 70 explains the use of these prosigns.

<i>Prosign</i>	<i>Functional description</i>
<u>AA</u> -----	Unknown station
AA-----	All after
AB-----	All before
<u>AR</u> -----	End of transmission
AS-----	Wait
B-----	More to follow
<u>BT</u> -----	Long break
C-----	Correct
DE-----	From
EEEEEEEEEE-----	Error
F-----	Do not answer
FM-----	Originator's sign
G-----	Repeat back
GR (number)-----	Group count
<u>GRNC</u> -----	Groups not counted
<u>HM</u> (transmitted 3 times).-----	Emergency silence sign (used only as prescribed in paragraph 70o).
<u>II</u> -----	Separative sign
<u>IMI</u> -----	Repeat
INFO-----	Information addressee sign



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<i>Prosign</i>	<i>Functional description</i>
<u>INT</u> -----	Interrogatory
<u>IX</u> -----	Execute to follow
<u>IX</u> (5-second dash)-----	Executive signal
<u>J</u> -----	Verify with originator and repeat
<u>K</u> -----	Invitation to transmit
<u>NM</u> -----	Deferred
<u>NR</u> -----	Number
<u>O</u> -----	Emergency
<u>OC</u> -----	Flash
<u>OP</u> -----	Operational immediate
<u>P</u> -----	Priority
<u>R</u> -----	Received (also Routine)
<u>T</u> -----	Transmit to
<u>TO</u> -----	Action addressee sign
<u>WA</u> -----	Word after
<u>WB</u> -----	Word before
<u>XMT</u> -----	Exempted addressee sign

## 70. Explanation and Use of Prosigns

a. AA "UNKNOWN STATION." AA is used in lieu of a call sign in establishing communication with a station whose call sign is not recognized.

### *Example*

XP5 hears his own call sign, but misses the call sign of the calling station. He transmits:

AA DE XP5 K

b. AA "ALL AFTER" AND AB "ALL BEFORE." These prosigns are used after IMI, C, J, and certain operating signals to identify a portion of a message.

c. AR "END OF TRANSMISSION." This prosign means, "This is the end of my transmission to you and no response is expected or required."

### *Examples*

(1) 9SV DE M2D R AR

(2) P7Z DE XP5—

R—151640Z

BT

DTYUR BCVFE

BT

AR

d. AS "WAIT."

(1) AS made during a transmission and without an ending sign indicates a short pause.

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*Example*

2NW DE M2D

P—111555Z

BT

JOIN CONVOY POINT AS

When ready to resume, M2D completes the transmission, commencing with a repetition of the last group already transmitted.

- (2) AS followed by AR means, "You are to wait," or "I must wait," as applicable.
  - (3) A station having received AS will wait for K before transmitting, unless in the meantime he has been given a message of high precedence to transmit, or it appears that he has been overlooked.
  - (4) See paragraph 12f for other uses of AS.
- e. B "MORE TO FOLLOW."
- (1) In the final instructions, B means, "More traffic to follow."

*Examples*

- (a) AN4 DE 9SV—

R—121856Z

GR54

BT

Text

BT

B K

- (b) In receipting for 9SV's final message, AN4 indicates that he has traffic to send to 9SV as follows:

9SV DE AN4 R B K

- (c) A precedence prosign, except R, may follow B to indicate the precedence of the message awaiting transmission:

9SV DE AN4 R B P K

- (2) In the final instructions, B followed by call sign(s) means, "More to follow to station(s) indicated."

*Example*

YJM DE M2D NR7—

P—071945Z

GR26

BT

Text

BT

B NOD K

All stations receipt, then M2D transmits to NOD.

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- (3) During a transmission, B followed by a number means, "More to follow; total number of groups transmitted thus far is as indicated." Messages of more than 100 groups are usually divided into 100-group parts in this way.

*Example*

XP5 DE AN4 NR35—

R—232145Z

GR178

BT

(. . . first 100 groups)—B 100

XP5 receipts for the hundred groups (or asks for repetitions, if needed).

DE XP5 R K

AN4 transmits a call and the number of the first group of the remaining part of the message and then completes his transmission as follows:

XP5 DE AN4 101—

(groups 101 to 178 inclusive)

BT

K

f. BT "LONG BREAK." BT is used to indicate the separation between the text and other parts of a message. It immediately precedes and follows the text. In procedure messages, BT is not used except when a date-time group is included.

*g. C "CORRECT."*

- (1) C used alone means, "You are correct."

*Examples*

- (a) P7Z transmits a message to BE6, who questions the accuracy of group nine:

P7Z DE BE6 INT 9 FRUYH K

FRUYH is what BE6 actually received.

If the questioned group is correct, P7Z transmits:

BE6 DE P7Z C K

- (b) 2NW transmits a "repeat back" (G) message to VF8. After VF8 repeats the message back correctly, 2NW transmits:

VF8 DE 2NW C AR

- (2) C followed by identification data means, "This is a correct version of the message or portions indicated."

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*Examples*

- (a) While transmitting a message to M2D, AN4 finds that he has incorrectly transmitted the second group, which should have been 2199. In the final instructions, AN4 transmits:

BT

C 2—2199K

- (b) After receiving a message from AN4, M2D questions his reception of the 7th group:

AN4 DE M2D INT 7—HRSEW K

HRSEW is what M2D actually received. AN4 checks and finds that M2D has received the group incorrectly. He transmits:

M2D DE AN4—C 7—HRIIW K

h. DE "FROM." DE is used only in the call and means, "This transmission is from the station whose designation follows."

i. EEEEEEEEE "ERROR."

- (1) To correct errors during a transmission, a succession of eight or more E's is transmitted and means, "An error in transmission has just been made." The phrase "eight or more E's" is intended to facilitate operation and must not be construed as permitting transmission of an excessive number of E's. In correcting errors in the heading, the error sign will be followed by the last prosign or operating signal correctly sent. Within the text an error sign will be followed by the last word or group correctly sent. The operator then continues with the correct version.

*Examples*

- (a) XP5 makes and corrects a mistake in transmitting a heading:

FAR DE XP5—

R—171830Z—

FM AN4—

TO XP5

9IV EEEEEEEEE

TO XP5

9SV—

INFO FAR—

GR54

BT

etc.

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- (b) NOD makes and corrects a mistake in transmitting text:

VF8 DE NOD—

P—311947Z—

GR12

BT

FERWS GYHUR JUY EEEEEEEEE

GYHUR JUQSA LIJYT etc.

- (c) VF8 makes and corrects a mistake in the text of a procedure message:

NOD DE VF8 IMI AA 4 EEEEEEEEE AA 34 K

- (2) To cancel a transmission while in progress, a succession of eight or more E's followed by the prosign AR is used, meaning, "This transmission is in error. Disregard it." This method of cancelling a transmission cannot be used after the transmission has been completed, that is after an ending sign has been sent.

*j.* F "DO NOT ANSWER."

- (1) F used in the transmission instructions means, "Stations called are not to answer this call or to receipt for this message or otherwise to transmit in connection with this transmission."

*Example*

AN4 transmits to M2D and does not want M2D to transmit for any purpose whatever in response:

M2D DE AN4—

F—

P—180245K

GR34

BT

Text

BT

AR

- (2) Messages containing the prosign F may be made through more than once, that is, transmitted several times in immediate succession, to insure reception. When this is done, the transmissions will be separated by the prosign IMI.

*k.* FM "ORIGINATOR'S SIGN." FM means, "The originator of this message is indicated by the designation immediately following." See paragraph 46.

*l.* G "REPEAT BACK." G means, "Repeat back the entire message," and is placed in the transmission instructions, when

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used. G may be used by a transmitting station to insure that the receiving station has received the message as transmitted, particularly if the message is of great importance or of a type which is difficult to transmit and receive.

*Example*

AN4 desires M2D to repeat back a message. AN4 transmits:

M2D DE AN4—  
G—  
OP—251445K  
GR13  
BT  
Text  
BT  
K

M2D complies as follows:

AN4 DE M2D—  
M2D DE AN4—  
G—  
OP—251445K  
GR13  
BT  
Text  
BT  
K

AN4 is satisfied that M2D has received the message correctly.

AN4 transmits:

M2D DE AN4 C AR

*m.* GR(NUMBER) "GROUP COUNT."

- (1) GR followed by a number is the group count, and means, "This message contains the number of groups indicated."
- (2) The group count normally appears in the message prefix. But if a message must be transmitted without delay, and before the group count has been determined, the prosign GRNC may be used in lieu of the group count. The actual group count will then be transmitted in the final instructions and the receiving operator will insert it in the message prefix.
- (3) INT GR (number) means, "Is the indicated group count correct?"
- (4) See paragraph 51 for further information concerning group count.

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n. GRNC "GROUPS NOT COUNTED." GRNC means, "The groups in this message have not been counted." This prosign is included in the prefix if it is necessary to indicate that the groups have not been counted. It must be included in messages bearing an accounting symbol when groups are not counted.

a.  $\overline{\text{HM}}$  (transmitted three times) "Emergency silence sign."

- (1)  $\overline{\text{HM}} \overline{\text{HM}} \overline{\text{HM}}$  means, "Stations addressed cease all transmission by the means of communication on which this order is given." A frequency number or code designation following  $\overline{\text{HM}} \overline{\text{HM}} \overline{\text{HM}}$  means, "Cease transmission on frequency indicated."
- (2) Emergency silence may be imposed only by order of the appropriate commander.
- (3) Stations receiving the emergency silence order do not answer, but must immediately cease transmission. Thereafter they may transmit only under the following circumstances:
  - (a) For the transmission of enemy contact reports.
  - (b) After emergency silence has been cancelled.
- (4) Emergency silence may be cancelled only by the authority who imposed it. Cancellation is accomplished by transmitting ZUG  $\overline{\text{HM}} \overline{\text{HM}} \overline{\text{HM}}$  (the operating signal ZUG means, "Negative").
- (5) If an authentication system is in force, a station must always authenticate itself when:
  - (a) Imposing emergency silence.
  - (b) Cancelling emergency silence.
  - (c) Calling another station during the period of emergency silence.

Authentication is accomplished by use of the operating signal ZNB, which means, "Authentication is\_\_\_\_\_."

### *Example*

M2D orders emergency silence on the YJM net.

YJM DE M2D  
 $\overline{\text{HM}} \overline{\text{HM}} \overline{\text{HM}}$  ZNB\_\_\_\_\_AR

M2D cancels the emergency silence.

YJM DE M2D  
 ZUG  $\overline{\text{HM}} \overline{\text{HM}} \overline{\text{HM}}$  ZNB\_\_\_\_\_AR

p. II "SEPARATIVE SIGN." This sign, written as a short dash, is used to avoid mistakes in reception which might occur if letters or figures of adjacent groups were run together. The separative sign is used in messages as follows:

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- (1) Before and after all prosigns in the procedure and preamble components of the heading, except DE, AA, and NR.
- (2) To separate the elements of the address component, that is, between preamble and the prosign FM, between the designation of the originator and the prosign TO, between the designation of the action addressee(s) and the prosign INFO, and between the designation of the information addressee(s) and the prosign XMT.
- (3) Between the call and the beginning of the repetition of a message to be repeated back.
- (4) To separate call signs belonging to adjacent message components or adjacent multiple transmission instructions.

*Example*

M2D XP5 DE AN4—  
M2D—T—NOD—XP5—T—FAR—  
FM AN4—Etc

- (5) The separative sign is used in procedure messages to separate portions of the text.

*Example*

AN4 DE 9SV  
IMI 18 TO 20—AA 36 K

The reply to the above is:

9SV DE AN4  
18 TO 20—CFRGH MJRDA CTHGU—AA 36—  
FGHJK LOPUY  
BT  
K

q. IMI "REPEAT." IMI means, "Repeat, or I repeat, message or portions of a message as indicated."

- (1) IMI without identification data means, "Repeat all of your last transmission."

*Example*

P7Z requests a repetition of the entire transmission just completed by FAR:

FAR DE P7Z  
IMI K

- (2) IMI followed by identification data means, "Repeat the indicated portion of your transmission."



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*Examples*

- (a) M2D requests AN4 to repeat the entire heading of the message just transmitted:

AN4 DE M2D

IMI AB

BT

K

- (b) M2D requests a repetition of the portion of the heading between the prosigns TO and INFO:

AN4 DE M2D

IMI TO TO INFO K

- (c) M2D requests a repetition of the portion of the message after the 47th group of the text:

AN4 DE M2D

IMI AA 47 K

- (3) In the text of a plain language message IMI means, "I am going to repeat the difficult portion just transmitted."

*Example*

2NW DE M2D—

R—ø11545K

GR46

BT

TRANSFER GILROY ZCSCHZISKI IMI

ZCSCHZISKI

JOHN SMITH etc.

- (4) Between the first and second transmissions of a message being sent twice, IMI means, "I am going to repeat this message."

*Example*

YJM DE M2D—

P—19173øZ

GR18

BT

Text

BT

IMI

YJM DE M2D—

P—19173øZ

GR18

BT

Text

BT

AR

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- (5) IMI cannot be used to obtain a repetition of a message or a portion thereof for which a receipt has been given. A procedure message containing an appropriate operating signal must be used for this purpose.
- (6) IMI is not used to correct an error in transmission. EEEEEEEE is used for this purpose.

r. INFO "INFORMATION ADDRESSEE SIGN." This prosign means, "Addressee(s) indicated by following designation(s) are addressed for information." See paragraph 48.

s. INT "INTERROGATORY."

- (1) INT preceding operating signals and/or prosigns indicates that the transmission is in the form of a question.

*Example*

VF8 inquires whether M2D has traffic for him:

M2D DE VF8  
INT QRU K

- (2) INT preceding a portion of message means, "Is my reception of this correct?"

*Example*

M2D asks NOD, "Is the date-time group as indicated?"

NOD DE M2D  
INT 150745Z K

- (3) INT may be used in conjunction with the *group count* sign as explained in paragraph 88.
- (4) INT cannot be used to question any part of a message for which a receipt has been given. A procedure message will be used for this purpose.

t. IX "EXECUTE TO FOLLOW." The uses of the *Execute to follow* sign are explained in paragraph 129.

u. IX(5-SECOND DASH) "EXECUTIVE SIGNAL." The uses of the *executive signal* are explained in paragraph 129.

v. J "VERIFY WITH ORIGINATOR AND REPEAT." This prosign is used only as prescribed in paragraph 83.

w. K "INVITATION TO TRANSMIT."

- (1) K means, "Invitation to transmit" or "This is the end of my transmission to you and a response is necessary." See paragraphs 9, 11, and 12.
- (2) When used in calling and answering, the prosign K is sent by both stations to terminate their transmissions.

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*Example*

XP5 calls BE6:  
BE6 DE XP5 K  
BE6 answers:  
XP5 DE BE6 K

- (3) When a station receipting for a message knows that the other station has additional traffic to transmit to him, he receipts and then indicates his readiness to receive the additional traffic by transmitting the prosign K.

*Example*

9SV receipts to AN4 for a message and tells him to go ahead and transmit additional traffic:

AN4 DE 9SV R K

x. NM "DEFERRED." This precedence prosign means, "Deferred Message." See paragraph 43.

y. NR "NUMBER."

- (1) NR followed by a number indicates the station serial number assigned to a message by a transmitting station. See paragraph 25.

*Example*

M2D DE AN4 NR17—  
NM—181920Z  
GR47  
BT  
etc.

- (2) In a multiple call transmission, if station serial numbers are used, the station serial number applicable to each called station is given in the same sequence as the call signs in the call.

*Example*

VF8 2NW DE M2D NR22 NR15—  
NM—232425Z, etc.

- (3) NR preceded by R and followed by a number means, "Message(s) with station serial number(s) as indicated have been received." The operating signal ZEC1 is used to indicate that certain messages have not been received.

*Examples*

(a) P7Z receipts for FAR's NR32:  
FAR DE P7Z  
R NR32 AR

**RESTRICTED—Security Information**

(b) NOD receipts for M2D's NR16 to NR25 inclusive:

M2D DE NOD  
R NR16 TO NR25  $\overline{AR}$

(c) AN4 indicates M2D's NR13 not received:

M2D DE AN4  
ZEC1 NR13 K

(4) NR preceded by  $\overline{INT}$  and followed by a number means, "Is the station serial number of the last message as indicated?"

*Example*

FAR DE P7Z  
 $\overline{INT}$  NR34 K

z. O "EMERGENCY." This precedence prosign means, "Emergency message." See paragraph 43.

aa. OC "FLASH." This precedence prosign means, "Flash message." See paragraph 43.

ab. OP "OPERATIONAL IMMEDIATE." This precedence prosign means, "Operational immediate message." See paragraph 43.

ac. P "PRIORITY." This precedence prosign means, "Priority message." See paragraph 43.

ad. R "ROUTINE." This precedence prosign means, "Routine message." See paragraph 43.

ae. R "RECEIVED."

(1) After a call, R means, "I have received your last transmission."

*Example*

AN4 DE M2D R  $\overline{AR}$

(2) After a call, R preceded by  $\overline{INT}$  means, "Have you received my last transmission?"

*Example*

NOD DE M2D  
 $\overline{INT}$  R K

(3) After a call, R preceded by  $\overline{INT}$  and followed by identification data means, "Have you received the message indicated?"

*Example*

VF8 asks NOD "Have you received M2D's 132050Z?"

NOD DE VF8  
 $\overline{INT}$  R M2D 132050Z K

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- (4) After a call, R followed by identification data means, "I have received the message indicated."

*Example*

NOD tells VF8, "I have received M2D's 132050Z."  
VF8 DE NOD  
R M2D 132050Z AR

*af.* T "TRANSMIT TO." T, when used, appears in the transmission instructions.

- (1) T alone means, "Station called transmit this message to all addressees in the address component."

*Example*

AN4 directs M2D to transmit to all addressees:  
M2D DE AN4—  
T—  
NM—161720Z—  
FM AN4—  
TO 2NW  
GR34  
BT  
etc.

- (2) T followed by an address designation(s) means, "Station called transmit this message to the addressee(s) whose address designation(s) follow(s)."

*Example*

F27 directs AN4 to transmit a message to XP5:  
AN4 DE F27—  
T—XP5—  
R—232125Z—  
FM F27—  
TO FAR—  
INFO XP5  
GR21  
BT  
etc.

- (3) T preceded by a call sign and followed by an address designation(s) means, "Station whose call sign precedes T, transmit this message to the addressee(s) whose address designation(s) follow(s)."

*Example*

AN4 calls both 9SV and M2D, and directs M2D to transmit the message to NOD:

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M2D 9SV DE AN4—  
M2D—T—NOD—  
NM—181920Z—  
FM AN4—  
TO M2D  
NOD  
9SV  
GR57  
BT  
etc.

- (4) Transmission instructions may be modified by use of the operating signal ZWL to denote that no forwarding action is required to the addressee(s) whose designation(s) immediately follow(s) ZWL.

*Example*

M2D transmits a message to action addressees in two different nets. He does this by transmitting the message twice, first to 2NW, then to XP5 to be relayed into the 55H net. All action addressees are shown in both transmissions. The transmission to XP5 is shown below:

XP5 DE M2D NR8—  
T—ZWL 2NW—  
R—071945K—  
FM M2D—  
TO BE6  
FAR  
P7Z  
2NW  
GR30  
BT  
etc.

*ag.* TO "ACTION ADDRESSEE." This prosign means, "Addressee(s) indicated by following designation(s) are addressed for action." See paragraph 47.

*ah.* WA "WORD AFTER." This prosign means, "word after," and is used after IMI, C, J, and certain operating signals to identify a portion of a plain language message. See paragraph 82.

*ai.* WB "WORD BEFORE." This prosign means, "word before," and is used in the same manner as WA. See paragraph 82.

*aj.* XMT "EXEMPTED ADDRESSEE." This prosign means, "The station(s) or addressee(s) immediately following is exempted from the collective call or address." See paragraph 49.

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*Example*

- (1) In the call:

YJM—XMT—NOD DE M2D—  
NM—171615Z—etc.

- (2) In the address:

G2C DE AN4 NR14—  
XP5—T—55H—  
R—201918Z—  
FM AN4—  
TO G2C  
55H—  
XMT FAR  
GR35  
BT  
etc.

## CHAPTER 5

### MESSAGE HANDLING

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#### Section I. TRANSMISSION

##### 71. Message Forms

a. Figure 3 shows a message which has been written on a Joint Messageform, processed by message center, and sent to a radio station for transmission. The radio operator transmits the heading (which has been handwritten by message center) and the text; he adds an appropriate ending to the transmission. The rest of the entries on the form pertain only to message center.

b. Figure 4 shows a message which has been written on a Joint Field Messageform. Additional figures will show the processing of this message. In the Field Messageform, the term "Modified Clear" (MOD CLEAR) pertains to the use of plain text with pre-arranged code words.

##### 72. Inspecting Message

Before transmitting a message, the radio operator inspects it for conformance with the following requirements. If the message clearly does not satisfy these requirements, or if there is doubt, the operator returns the message to message center or the originator for correction, as the situation may require.

a. The heading must be in proper order. (If no message center is associated with the radio station, the operator writes the heading.)

b. The text must be legible.

c. If the message is to be sent in the clear, it must be marked "UNCLASSIFIED" by the originator, or must satisfy the following requirement of JANAP 122(A): "In tactical operations, simulated or actual, upon authorization of the commanding officer or his authorized representative, messages of any classification except TOP SECRET may be transmitted in the clear over any nonapproved wire circuit or any radio channel when speed of delivery is so essential that time cannot be spared for encryption and the transmitted information cannot be acted on by the enemy



# RESTRICTED — Security Information

ROUTING M2D DE AN4 R-250830Z FM AN4- TO M2D	<b>JOINT MESSAGEFORM</b>	COMMUNICATIONS CENTER NO <span style="font-size: 1.5em;">501</span>										
SPACE ABOVE FOR COMMUNICATIONS CENTER ONLY												
FROM: (Originator) COMNAVMEIGHT YOKOHAMA JAPAN	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">DATE-TIME GROUP 250830Z</td> <td style="width: 70%;">SECURITY CLASSIFICATION <b>UNCLASSIFIED</b></td> </tr> <tr> <td style="width: 30%;">PRECEDENCE RTR</td> <td style="width: 70%;">ACTION ROUTINE</td> </tr> <tr> <td style="width: 30%;"> <input type="checkbox"/> BOOK MESSAGE   <input type="checkbox"/> MULTIPLE ADDRESS         </td> <td style="width: 70%;">           INFORMATION  <input checked="" type="checkbox"/> ORIGINAL MESSAGE            CRYPTOPROTECTION  <input type="checkbox"/> YES <input type="checkbox"/> NO         </td> </tr> <tr> <td colspan="2" style="text-align: center;">REFERS TO MESSAGE</td> </tr> <tr> <td style="width: 30%;">IDENTIFICATION</td> <td style="width: 70%;">CLASSIFICATION</td> </tr> </table>		DATE-TIME GROUP 250830Z	SECURITY CLASSIFICATION <b>UNCLASSIFIED</b>	PRECEDENCE RTR	ACTION ROUTINE	<input type="checkbox"/> BOOK MESSAGE  <input type="checkbox"/> MULTIPLE ADDRESS	INFORMATION <input checked="" type="checkbox"/> ORIGINAL MESSAGE CRYPTOPROTECTION <input type="checkbox"/> YES <input type="checkbox"/> NO	REFERS TO MESSAGE		IDENTIFICATION	CLASSIFICATION
DATE-TIME GROUP 250830Z	SECURITY CLASSIFICATION <b>UNCLASSIFIED</b>											
PRECEDENCE RTR	ACTION ROUTINE											
<input type="checkbox"/> BOOK MESSAGE  <input type="checkbox"/> MULTIPLE ADDRESS	INFORMATION <input checked="" type="checkbox"/> ORIGINAL MESSAGE CRYPTOPROTECTION <input type="checkbox"/> YES <input type="checkbox"/> NO											
REFERS TO MESSAGE												
IDENTIFICATION	CLASSIFICATION											
TO: CG IX CORPS SENDAI JAPAN												
INFO: CHARLIE DASH ONE TWO  REQUEST YOU SUBMIT NAMES TWO OFFICERS TO ATTEND JANAP ONE TWO FOUR ABLE SCHOOL THIS HEADQUARTERS SECOND THROUGH FIFTEENTH APRIL INCLUSIVE												
DRAFTER'S NAME (and signature, when required) CHARLES Q PULLMAN		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">SECURITY CLASSIFICATION <b>UNCLASSIFIED</b></td> <td style="width: 50%;">PAGE 1 OF 1 PAGES</td> </tr> <tr> <td colspan="2" style="text-align: center;">           RELASING OFFICER'S SIGNATURE  <i>Joe P. Dunn</i> </td> </tr> <tr> <td colspan="2" style="text-align: center;">           OFFICIAL TITLE            JOE P DUNN COL INF G-3         </td> </tr> </table>	SECURITY CLASSIFICATION <b>UNCLASSIFIED</b>	PAGE 1 OF 1 PAGES	RELASING OFFICER'S SIGNATURE <i>Joe P. Dunn</i>		OFFICIAL TITLE JOE P DUNN COL INF G-3					
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OFFICIAL TITLE JOE P DUNN COL INF G-3												
SYMBOL C-12	TELEPHONE 663											

 DD FORM 1 OCT 49 **173**

REPLACES AND FORM 173, 1 MAY 48, WHICH MAY BE USED.

16-58862-2 U. S. GOVERNMENT PRINTING OFFICE: 1950-O-289554

TM 856-2

Figure 3. Message on Joint Messageform after processing by message center.

in time to influence the situation in question. Such written messages shall be marked "SEND IN CLEAR" over the signature of the commander or his authorized representative, but will not include any marking or indication that it is classified when it is transmitted."

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THESE SPACES FOR MESSAGE CENTER ONLY		
TIME FILED	MSG CEN NO.	HOW SENT
		<b>SECRET</b>
<b>MESSAGE</b> (SUBMIT TO MESSAGE CENTER IN DUPLICATE)		(CLASSIFICATION)
No.	DATE <u>17 JUN 48</u>	
To <u>CO 56 INF REGT</u>		
<u>REPLACEMENTS YOUR</u>		
<u>REGIMENT ARRIVE</u>		
<u>ONE NINE JUNE</u>		
<u>GG 63 INF DIV</u>		<u>2245Z</u>
OFFICIAL DESIGNATION OF SENDER		TIME SIGNED
AUTHORIZED TO BE SENT IN CLEAR	SIGNATURE OF OFFICER	SIGNATURE AND GRADE OF WRITER
SC Form M-210 *	<u>A.W. Balt Col.</u>	

TM 454-3

Figure 4. Message on Field Messageform as received at message center.

THESE SPACES FOR MESSAGE CENTER ONLY		
TIME FILED <u>172250Z</u>	MSG CEN NO. <u>143</u>	HOW SENT <u>RAD</u>
<u>P7Z DE XP5 P-172245Z</u>		(CLASSIFICATION)
<b>MESSAGE</b> (SUBMIT TO MESSAGE CENTER IN DUPLICATE)		
No.	DATE	
To		
<u>JCPQR NOBCX FGCLW RMZ YA</u>		
<u>VDPOF SAXVW UVAPE RXZ AI</u>		
<u>MOABT FZABG RTAVS</u>		
OFFICIAL DESIGNATION OF SENDER		TIME SIGNED
AUTHORIZED TO BE SENT IN CLEAR	SIGNATURE OF OFFICER	SIGNATURE AND GRADE OF WRITER
SC Form M-210 *		

TM 454-4

Figure 5. Message after processing by message center.

### 73. Transmitting Message

a. *General.* Figure 5 shows the message of figure 4 after it has been processed by message center and sent to the radio station for transmission.

- (1) Messages are transmitted exactly as written. Abbreviations are not substituted for plain language or plain language substituted for abbreviations.
- (2) Numbers in call signs, station serial numbers, date-time groups, and those used with operating signals and pro-signs are written and transmitted as digits. See paragraph 65.
- (3) The prosign  $\overline{\text{BT}}$  is transmitted immediately preceding and following the texts of all messages, except procedure messages in which a date-time group is not used. See paragraph 70f.

b. *Long Messages.* Messages containing more than 100 groups should normally be transmitted in blocks of 100. Each block of 100 groups will be followed by the prosign B and the number indicating the number of groups transmitted thus far. If desired, it may be followed by the prosign K to permit the receiving station to receipt successively for each 100 groups.

### 74. Operator's Service

After the message has been transmitted and the receiving operator has receipted for it, the transmitting and receiving operators will write their indorsements on the message. Their services will include their personal signs and the time at which the receiving operator receipted. Figures 6 and 7 show the message after the operators have written their indorsements on it.

### 75. Indicating Precedence in Preliminary Call

a. When traffic is heavy, numerous messages of different precedences may be awaiting transmission at various stations in a net. In such circumstances, it is good practice to use a preliminary call to indicate the precedence of a message awaiting transmission. The station to which the call is directed, and other stations of the net, as well, may then determine whether they have messages of higher precedence awaiting transmission. If another station does have such messages, it will immediately transmit a preliminary call to inform the net of this.

#### *Examples*

- (1) NOD tells M2D, "I have a priority message to transmit."  
M2D DE NOD P K

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THESE SPACES FOR MESSAGE CENTER ONLY		
TIME FILED <u>172250Z</u>	MSG CEN NO. <u>143</u>	HOW SENT <u>RAD</u>
P1Z DE XP5 P-172245Z		(CLASSIFICATION)
<b>MESSAGE</b> (SUBMIT TO MESSAGE CENTER IN DUPLICATE)		
No. _____	DATE _____	
To _____		
JCPQR NOBCX FGCLW RMZYA VDPOF SAXVW UVAPE RXZAI MDABT FZABG RTAVS <div style="border: 1px solid black; border-radius: 50%; padding: 5px; display: inline-block; margin-top: 10px;">2301Z JC</div>		
OFFICIAL DESIGNATION OF SENDER		TIME SIGNED
AUTHORIZED TO BE SENT IN CLEAR	SIGNATURE OF OFFICER	SIGNATURE AND GRADE OF WRITER

SC Form M-210 ★

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TM 454-3

Figure 6. Message after transmitting operator's indorsement.

THESE SPACES FOR MESSAGE CENTER ONLY		
TIME FILED <u>P1Z DE XP5</u>	MSG CEN NO. <u>P-172245Z</u>	HOW SENT
<b>MESSAGE</b> (SUBMIT TO MESSAGE CENTER IN DUPLICATE)		(CLASSIFICATION)
No. _____	DATE _____	
To _____		
JCPQR NOBCX FGCLW RMZYA VDPOF SAXVW UVAPE RXZAI MDABT FZABG RTAVS <div style="border: 1px solid black; border-radius: 50%; padding: 5px; display: inline-block; margin-top: 10px;">2301Z BJ</div>		
OFFICIAL DESIGNATION OF SENDER		TIME SIGNED
AUTHORIZED TO BE SENT IN CLEAR	SIGNATURE OF OFFICER	SIGNATURE AND GRADE OF WRITER

SC Form M-210 ★

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Figure 7. Message after receiving operator's indorsement.

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- (2) If M2D has no messages of higher precedence to transmit, and if no other calls are immediately heard in the net, M2D replies:

NOD DE M2D K

- (3) Assume that while receiving the call of example (1), the operator at M2D was handed an operational immediate message for transmission to some other station in the YJM net. M2D replies:

NOD DE M2D AS AR

NOD does not receipt for the above transmission, but merely waits until M2D calls again and sends K.

- (4) Assume that while hearing the call of example (1), the operator at 2NW was handed an emergency message for transmission to VF8. 2NW immediately transmits:

VF8 DE 2NW O K

VF8 replies:

2NW DE VF8 K

b. The operating signal ZBO, meaning, I have (or \_\_\_\_\_ has) (number) messages of precedence (any precedence prosign) \_\_\_\_\_ for you (or for \_\_\_\_\_),” may be used in a preliminary call to indicate the number of messages of various precedences awaiting transmission.

### *Example*

M2D DE VF8 ZBO 2 P—8 R K

## 76. Transmitting Messages in Strings

a. Transmission of messages in strings is authorized within the U. S. Army and in joint communication with the U. S. Navy and U. S. Air Force; it is not authorized for combined communication.

b. When radio communication is good, it frequently facilitates the handling of traffic for one station to send several messages to another station without interruption. Normally five messages should comprise a string; however, the receiving station may indicate the number of messages to be transmitted in a given string by use of the operating signal QSG.

c. When transmitting messages in strings, the transmitting operator ends each message by transmitting B and the precedence prosign of the next message. The transmitting operator then pauses briefly to allow any station holding higher precedence traffic to break in. If no station interrupts, the transmitting operator proceeds with the next message.

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d. Upon transmitting the last message in a string, the transmitting operator requests a receipt before continuing with another string. This is done by ending the last message of each string with the prosigns B, precedence prosign, K, meaning, "There is a message of precedence (\_\_\_\_\_) to follow; receipt for what I have sent."

e. The transmitting operator indicates that he desires to transmit messages in strings by using the operating signal QTC, meaning, "I have \_\_\_\_\_ (number) messages for you (or for \_\_\_\_\_)."

*Example*

AN4 has eleven messages for XP5. AN4 transmits:

XP5 DE AN4 QTC11 K

ZP5 replies:

AN4 DE XP5 QSG5 K

AN4 then transmits the first message of his first string of five:

XP5 DE AN4 NR17—

P—191845Z—

GR25

BT

Text

BT

B P

AN4 pauses briefly to allow any station holding higher precedence traffic to break in. No station interrupts. AN4 proceeds with the second message. In all messages of a string after the first, the call is optional. If the call is omitted, the separative sign must be transmitted.

NR18—

P—191850Z

GR34

BT

Etc.

AN4 transmits the remainder of the first string of five messages. He ends the fifth message as follows, asking for a receipt and indicating that the first message of the next string has routine precedence:

BT B K

XP5 receipts (or requests needed repetitions if break in procedure has not been used to obtain repetitions).

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AN4 DE XP5 R K

If no other station breaks in, AN4 proceeds to transmit his next string of messages.

### 77. Transmitting Blind

When an answer cannot be obtained from a station called, messages may be transmitted blind at the discretion of a responsible officer. Each message must be transmitted twice, with IMI separating the first and second transmissions. *Subsequent efforts must be made to obtain a receipt.*

## Section II. RETRANSMISSION

### 78. Relaying Messages

a. Station A sends a message containing transmission instructions to station B. In accordance with the transmission instructions, station B transmits the message to station C. Station B is said to have *relayed* the message.

b. Before transmitting the message to station C, station B rewrites the procedure component of the heading as follows:

- (1) The call, station serial number, and transmission instructions received from station A are removed from the message.
- (2) A new call is written, showing station C as the called station.
- (3) A new station serial number is placed on the message if station B is using station serial numbers for its messages to station C.
- (4) New transmission instructions are written, if needed.

c. Station B also rewrites the transmission ending as follows:

- (1) The time group, if included in the message, remains unchanged.
- (2) Contents of the final instructions pertaining only to station B are removed from the message. Contents pertaining to station C remain unchanged.
- (3) Station B places an appropriate ending sign on the message.

d. Except for the changes listed above, station B transmits the message to station C *exactly as it was received from station A.*

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### Example

AN4 transmits the following message to M2D:

M2D DE AN4 NR19—

T—2NW—

P—191820Z

FM AN4—

TO 2NW—

INFO M2D

GR56

BT

Text

BT

B K

M2D rewrites the procedure component of the heading and the ending, then transmits the message to 2NW:

2NW DE M2D—

P—191820Z—

FM AN4—

TO 2NW—

INFO M2D

GR56

BT

Text

BT

K

## 79. Readdressing Messages

a. A headquarters receives a message via radiotelegraph. The message designates certain addressees, including the above-mentioned headquarters. The headquarters decides to send the message via radiotelegraph to an addressee(s) not included in the original message. This may be done without rewriting the message; a supplementary heading is added to the message preceding the original preamble, but the remainder of the original message is not changed. This process is known as *readdressing*.

b. For full information on readdressing messages, refer to ACP 124(A).

## 80. Refiling Messages

a. Messages which have been received in the basic message form via means other than radiotelegraph (for example, tape relay, visual, etc.) will require reprocessing before they are forwarded over a military radiotelegraph circuit.



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b. Under certain conditions it is necessary to relay over military circuits official messages which have been prepared in forms other than the basic message form (ICAO, commercial, etc.). In such cases, messages must be reprocessed before transmission over military radiotelegraph circuits.

c. The reprocessing mentioned in *a* and *b* above is known as *refiling*. For full information on refiling messages, refer to ACP 124(A).

## Section III. REVISION

### 81. Identification of Messages

a. Messages should normally be identified by use of the date-time group, or, by the station serial number when used. The message may be further identified by adding the designation of the originating station and/or the group count. If further identification is required, the complete preamble, address, or partial or complete text may be used. In all cases, the data used to identify a message should be as brief as practicable, consistent with positive identification. Be careful when identifying encrypted messages that no plain language reference is made to address or text portions which were encrypted.

b. Parts of messages are identified as shown in examples below. If a word or group occurring more than once in a message is used to identify part of that message, it is assumed that the first occurrence of that word or group is implied. If otherwise intended, amplifying data such as adjacent words or groups must be included.

#### *Examples*

- (1) AB BT denotes all before the text, i.e., the entire heading.
- (2) AA HTYGR BT denotes all of the message ending, where HTYGR is the last group in the message.
- (3) AA BT denotes the complete text and the message ending.

### 82. Repetitions and Corrections

a. During transmission: When errors occur during a transmission, the transmitting operator transmits the error prosign, EEEEEEEE, the last word, group, or prosign correctly transmitted before the error, and the corrected word or group; he then continues with the transmission. See paragraphs 14 and 70i.

b. After transmission but before receipt is obtained: When an error or omission is noticed by the receiving operator after a transmission, but before a receipt has been sent, or when a mes-

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sage has not been completely and correctly received, the receiving operator requests corrections or repetitions by means of the appropriate prosigns. The transmitting operator sends such corrections or repetitions, using appropriate prosigns.

c. After receipt has been sent: Procedure messages containing appropriate operating signals are normally used to request and furnish corrections and repetitions when these are desired after a receipt has been sent; service messages may also be used for this purpose. Such a procedure or service message may be assigned the precedence considered necessary to insure accomplishment of its purpose. Normally the precedence assigned will be equal to that of the message to which it refers.

d. In requesting repetitions or corrections of the heading of a message: If portions of more than one element are desired, a repetition of the entire heading must be requested. The same applies to corrections sent without requests for repetitions. When the repetition or correction desired is within one element, the request for such must include the beginning and ending prosigns of that element, i.e., FM to TO, TO to INFO, INFO to GR.

e. Corrections sent without request: Corrections sent without request are preceded by the prosign C and, when necessary, with appropriate identifying data. Such corrections are transmitted in the same manner as indicated by the answers in the examples of repetition below.

### *Examples of Repetition*

(See par. 70q for additional examples of repetition and par. 70g for examples of correction.)

- (1) AN4 transmits a message to the G2C net, using the net call sign. (If AN4 makes a multiple call rather than a collective call, the procedure is the same.) M2D requests a repetition of a portion of the message containing the call. In his transmission to M2D, AN4 must repeat the original call. AN4's original transmission was:

G2C DE AN4—  
R—171820Z—  
FM AN4—  
TO G2C—  
etc

M2D requests a repetition of the entire transmission:

AN4 DE M2D  
IMI K

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AN4 answers:

M2D DE AN4—  
G2C DE AN4—  
R—171820Z—  
FM AN4—  
TO G2C—  
etc

- (2) FAR needs a repetition of the date-time group and group count of the last message transmitted by XP5 (a single address message). FAR must request repetition of the entire heading (see par. 82d). FAR transmits:

XP5 DE FAR  
IMI AB  
BT  
K

XP5 answers:

FAR DE XP5—  
AB  
BT  
—FAR DE XP5 NR27—  
P—212315Z  
GR35 K

- (3) Repeat all after the 30th group. Request:

XP5 DE FAR  
IMI AA 30 K

Answer:

FAR DE XP5  
AA 30—XDWRFBGTFD MJHRG LKOUJ VGRDX  
BT  
K

- (4) Repeat group 11 of last message. Request:

XP5 DE FAR  
IMI 11 K

Answer:

FAR DE XP5  
11—FGHJK K

- (5) Repeat groups 6 to 9 of last message. Request:

XP5 DE FAR  
IMI 6 TO 9 K

Answer:

FAR DE XP5  
6 TO 9—NBGRD CGNUF XSWDC MKIUJ K

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- (6) Repeat group 3 and groups 9 to 11 of last message.  
Request:

XP5 DE FAR  
IMI 3—9 TO 11 K

Answer:

FAR DE XP5

3—CVBNM—9 TO 11—BGTRE MKOIU VGHJK K

In plain language messages, portions of the text are identified as words rather than as group numbers. The prosigns WA and WB are used as needed.

- (7) Request:

XP5 DE FAR  
IMI WA CARRY K

Answer:

FAR DE XP5  
WA CARRY—OUT K

- (8) Request:

XP5 DE FAR  
IMI CARRY TO SIXTEEN K

Answer:

FAR DE XP5

CARRY TO SIXTEEN—CARRY OUT PLAN SIXTEEN K

### **83. Verification of Messages**

a. Requests for verification are initiated by addressees only and may be made by procedure, service, or regular messages.

b. The prosign J may be used to request verification of the heading, a portion of the heading, the entire text, or a portion of the text of any plain language message. In the case of encrypted messages, J may be used to request verification of an entire message, but may be used to request verification of a portion of a message only if permitted by the cryptosystem employed.

c. J sent after a call without identifying data means, "Verify with originator and repeat your last message."

d. J sent after a call and followed by identification data means, "Verify with originator and repeat message or portion thereof as indicated."

e. When the text of an abbreviated plaindress message is such that its meaning would normally be determined prior to receipting for its transmission and it is determined prior to receipting that

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it is necessary to request a verification, such a request may be made by use of the prosign J instead of receipting.

*Examples*

- (1) BE6 desires XP5's message 231545Z verified and repeated.

XP5 DE BE6  
J 231545Z K

XP5 receipts for the above:

BE6 DE XP5  
R AR

XP5 checks with the originator and is informed that the original message was correct. XP5 sends C to BE6 and repeats the message:

BE6 DE XP5  
C 231545Z  
NM—231545Z—  
FM XP5—  
TO BE6—  
GR8  
BT  
PROCEED ON DUTY ASSIGNED X MAKE MOVEMENT  
REPORTS  
BT  
K

- (2) Verify and repeat all before the text of message indicated. Request.

M2D DE AN4  
J 161725K AB  
BT  
K

M2D receipts:

AN4 DE M2D  
R AR

M2D checks with the originator and answers:

AN4 DE M2D  
C 161725K AB  
BT  
P—161725K—  
FM M2D—  
TO AN4—  
GR37 K

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(3) Verify and repeat all after "assigned." Request:

M2D DE NOD

J 141520Z AA ASSIGNED K

M2D receipts:

NOD DE M2D

R AR

The originator at M2D discovers he has made an error in the original message and desires it corrected to read, "Make own movement report." The original message had two addressees. M2D transmits:

NOD VF8 DE M2D

FM M2D—

TO NOD

VF8

C 141520Z—AA ASSIGNED—

MAKE OWN MOVEMENT REPORT

BT

K

### 84. Cancellation of Transmissions

*a. During transmission.* Before an ending sign K or AR has been sent to signify completion of transmission of a message, the transmission may be canceled by sending EEEEEEEE AR. See paragraph 70i(2).

*b. After transmission.* A message which has been completely transmitted may be canceled only by a new message properly authorized.

### 85. Duplicate Messages

Occasionally it may be necessary to transmit an exact duplicate of a message previously transmitted or believed to have been transmitted; this might occur when a message has been lost during handling. When such a duplicate transmission is made, an appropriate operating signal (such as ZFG) must be placed in the message instructions if the duplicate transmission is initiated by the originator, or in the transmission instructions if the duplicate transmission is initiated by a relaying station.

### 86. Acknowledgment of Messages

*a.* An acknowledgment is a message from addressee to originator conveying the information that a certain other message has been received and is understood by the addressee.

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b. Acknowledgment on nontactical circuits are prepared and handled as ordinary messages.

c. Acknowledgments on tactical circuits may be handled as ordinary messages or as shown below.

### *Examples*

- (1) The operating signal ZEV, meaning, "Acknowledge this message," may be placed in the message instructions.

2NW DE M2D ZEV

BT

Text

BT

K

- (2) After the receiving station has receipted for a message, the originator decides to request acknowledgment.

2NW DE M2D

INT ZEV 141415Z K

2NW receipts for the above:

M2D DE 2NW

R AR

2NW consults the addressee, then acknowledges:

M2D DE 2NW

ZEV 141415Z K

*Note.* Except when ZEV is placed in message instructions, acknowledgment is requested by transmitting INT ZEV.

## 87. Break-in Procedure

a. Break-in procedure is the method used by an operator to interrupt another station's transmission. The break-in signal consists of a series of dashes.

b. When a transmitting station is sending a message to only one receiving station, the receiving operator may transmit the break-in signal for the purpose of asking the transmitting station to repeat, wait, change frequency, etc. When the transmitting operator hears the dashes, he stops transmitting to ascertain the reason for the break-in. If three attempts to break-in are unsuccessful, the receiving operator ceases attempts to break-in until completion of the transmission in progress. The break-in is not used for the above purposes when two or more stations are receiving a transmission.

### *Example*

An operator breaks in to request a repetition. He asks for a repetition of all after the last word or group received correctly.

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AN4 is transmitting to 9SV:

DRFTG NHRFD XFUGY JUTFD, etc.

9SV misses the two groups following group 16 (NHRFD). He transmits:

———— DE 9SV IMI AA 16 K

AN4 then transmits:

DE AN4 AA 16—XFUGY JUTFD, etc.

c. Under the conditions explained in paragraph 43, any station may break-in on a transmission in order to transmit a message of higher precedence.

### *Example*

AN4 is transmitting a routine message to XP5. M2D is handed an OP message for AN4 and must break in. M2D transmits:

———— OP

Upon hearing the series of dashes, AN4 stops transmitting. M2D transmits:

AN4 DE M2D—

OP— 211750Z

etc.

## 88. Checking Group Count

a. When the number of groups received in a message does not agree with the group count transmitted, the receiving station will immediately question the transmitting station by transmitting INT GR (number, which means, "Is the number of groups as indicated?") The number following INT GR will be the number of groups *actually received*. If the transmitting operator, after rechecking the group count, agrees with the count of the receiving operator, then the transmitting operator will send the prosign C, meaning, "Correct." If the transmitting operator does not agree, he transmits the correct group count and the first character of each word or group of the text. For an encrypted text exceeding 50 groups, if the receiving operator is incorrect, the transmitting operator will transmit the correct group count and the first character of the first, tenth, and each following tenth group, transmitting the identifying group number before each character.

### *Examples*

(1) 2NW transmits a 10-group message to M2D, giving the group count as 9. M2D transmits:

2NW DE M2D INT GR10 K

2NW rechecks his group count and replies:

M2D DE 2NW C K



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- (2) 2NW transmits a 10-group plain language message to M2D, but M2D receives only 9 groups. M2D transmits:

2NW DE M2D INT GR9 K

2NW replies:

M2D DE 2NW GR10

BT

S G T J U Y 4 R M L

BT

K

M2D now requests 2NW to repeat the missing group:

2NW DE M2D IMI 7 K

2NW transmits:

M2D DE 2NW—7—49000 K

- (3) 2NW transmits a 92-group encrypted message to M2D, but M2D receives only 90 groups. M2D transmits:

2NW DE M2D INT GR90 K

2NW replies:

M2D DE 2NW GR92

BT

1—L 10—P 20—U 30—H 40—R

50—K 60—T 70—E 80—M 90—F

BT

K

M2D now requests 2NW to repeat the series of groups in which two groups were missed:

2NW DE M2D IMI 40 TO 50 K

b. Subject to a check of the group count, as explained above, the group count of the transmitting station is final.

## 89. Traffic Check

a. At the end of the radio day, or just prior to the closing of a net, stations using station serial numbers may check traffic with other stations in the net to ascertain whether any messages have been lost in handling or transmission.

b. A traffic check may be made only when it will not give information of value to an enemy. In a tactical situation, when a traffic check is necessary, it should be made by means other than radio, if possible.

c. The NCS initiates the traffic check. The following operating signals are used: ZIC, meaning, "Station serial number(s) of last message(s) transmitted to you (or to \_\_\_\_\_) is (are) \_\_\_\_\_" and ZID, meaning, "Station serial number(s) of

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last message(s) received from you (or from \_\_\_\_\_) is (are) \_\_\_\_\_."

### *Example*

Assume that AN4 has handled the following traffic: to M2D 4 messages, from M2D 19 messages; to XP5 32 messages, from XP5 12 messages; to 9SV 21 messages, from 9SV 15 messages. AN4 transmits:

G2C DE AN4

ZIC M2D 4 XP5 32 9SV 21 ZID M2D 19 XP5 12 9SV 15 K

The other stations of the net, upon hearing this traffic check, will receipt for the above transmission, then compare AN4's traffic figures with their own logs. Assuming that the other stations agree with AN4's figures, they will transmit:

AN4 DE M2D C AR

AN4 DE XP5 C AR

AN4 DE 9SV C AR

Other stations of the net check traffic with each other in a manner similar to the above.

d. When the traffic check does not balance, stations concerned must challenge the proper stations by use of appropriate operating signals. If it is found that a message has been lost and must be retransmitted, see paragraph 85.

## 90. Duplicate Numbers

a. Occasionally two messages may inadvertently be assigned the same station serial number. At times this is not discovered until the close of the radio day, when the traffic is checked.

b. When it is found that two or more messages have been given the same station serial number, the message first transmitted with that number will retain the number. New numbers will be applied to all following messages in order of transmission. The operating signal ZIB, meaning, "Change station serial number of message \_\_\_\_\_ to read number \_\_\_\_\_," is used.

## CHAPTER 6

# COMMUNICATION SECURITY

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### Section I. GENERAL

#### 91. Definition

Communication security is the protection of communication in such a manner as to prevent or delay any enemy or unauthorized person from gaining useful information therefrom. ACP 122(B) is the final authority in matters of communication security.

#### 92. Importance of Security

- a. Every radio transmission made, regardless of its nature, offers information to an alert enemy.
- b. Without communication security it is impossible—
  - (1) To conceal the location, composition, movements, and plans of our armed forces.
  - (2) To obtain tactical or strategic surprise against an enemy.
  - (3) To avoid susceptibility to enemy attack resulting from disclosure of military information.

#### 93. How Security is Achieved

Communication security is achieved by effective defensive and preventive measures against—

- a. Theft, capture, or salvage of equipment, messages, or communication documents.
- b. Espionage, observation, and photography of communication operations, equipment, messages, or documents.
- c. Interception during transmission.
- d. Traffic analysis.
- e. Cryptoanalysis.
- f. Imitative deception.
- g. Radio direction finding.

#### 94. Reliability, Security, and Speed

- a. The three fundamental requirements of military communication are reliability, security, and speed. Reliability of communication requires assurance that a communication will be delivered

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in intelligible form to the proper addressee and that the meaning intended by the originator will not be altered or obscured in the process. Reliability is paramount, and should never be sacrificed for either security or speed.

b. There is a variable relationship between security and speed. In the planning stages of an operation, for example, when only a few persons should know what is contemplated, security is far more important than speed. As the time of execution approaches, additional persons must know the plan, and preparations cannot be so effectively concealed; speed is then increasingly important. In combat, messages of any classification except TOP SECRET may be transmitted in plain language, when such transmission is authorized by the appropriate commander; but even during combat, due consideration must be given to security. Modern high grade cryptosystems permit security with speed and speed with security.

## **Section II. RESPONSIBILITY OF OPERATOR**

### **95. General**

The requirements mentioned in paragraphs 91 through 94 are taken into consideration when messages are handed to the operator for transmission. It is then the duty of the operator, as it is of everyone at all times, to insure that the enemy will not gain any useful information from the message transmission even though intercepted. It is further the duty of the operator to insure that none of his transmissions and no action or omission of any nature on his part can directly or indirectly provide any enemy with useful information. The operator accomplishes this duty by fulfilling the requirements of physical security, cryptographic security, transmission security, and censorship.

### **96. Physical Security**

Physical security is the safeguarding of equipment, documents, and messages from compromise by theft, inspection, photography, or other physical means. Radio operators must insure the physical security of all material under their control. Unauthorized persons must not be permitted to handle, inspect, or photograph equipment, documents, or messages. All message copies, documents, and other papers pertaining to communication must be burned, not merely thrown away, when they have served their purpose. When immediate danger of capture by an enemy exists, all equipment and papers must be destroyed. See paragraph 101.

## 97. Cryptographic Security

Cryptographic security is the concealment by cryptography of the meanings of communications so that they will be intelligible only to authorized persons. Proper cryptography guards against cryptanalysis and traffic analysis. Message center personnel are usually responsible for encrypting and decrypting messages. In certain instances, however, operators are entrusted with cryptographic equipment and documents and are required to encrypt and decrypt messages. When this occurs, operators must carefully follow the rules of the cryptosystem in use and must take particular pains to ensure physical security. Cryptographic material is kept under lock and key except during use by authorized persons. Cryptographic material is destroyed whenever danger of capture exists.

## 98. Transmission Security

a. Transmission security is the conduct of radio transmission in such a manner as to make it as difficult as possible for an enemy to intercept the transmission, to use the transmission for direction-finding, or to gain information from message headings, procedure messages, calls, and other nonencrypted transmissions. Total responsibility for transmission security rests upon the radio operator, and he must be constantly aware of the necessity for and means of achieving transmission security.

b. It is assumed that the enemy will use radio direction-finders and radio intercept equipment on all transmissions. The use of radio direction-finders by the enemy may disclose the position of a transmitting station. Therefore, it should be remembered that an enemy is less likely to obtain suitable bearings when transmissions are short. In addition, the possibility of interception and direction-finding increases with length of transmission. Skip-zone phenomena of high-frequency radio propagation cannot be relied upon to insure against direction finding, even when the direction-finders are believed to be in a skip zone.

c. Even without knowledge of the cryptosystem in use, enemy radio intercept stations can gain valuable knowledge from the number and kind of radio transmissions being made. Again, making fewer and shorter transmissions will decrease the chance of the enemy to obtain information.

d. Enemy radio stations may attempt to pass fraudulent messages to friendly stations by using false call signs or imitating the transmitting techniques of particular friendly operators. This may be done for the purpose of misleading our armed forces or

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merely to waste valuable circuit time. Operators can detect fraudulent transmissions by proper use of authentication. See paragraph 100.

e. The following rules are essential to transmission security and must be strictly enforced on all military radiotelegraph circuits.

- (1) No transmission shall be made which has not been authorized by proper authority.
- (2) The following practices are specifically forbidden:
  - (a) Violation of radio silence.
  - (b) Unofficial conversation between operators (chatter).
  - (c) Transmitting in a directed net without permission.
  - (d) Excessive tuning and testing.
  - (e) Transmitting the operator's personal sign or otherwise identifying communication personnel.
  - (f) Unauthorized use of plain language.
  - (g) Use of other than authorized prosigns.
  - (h) Unauthorized use of plain language in place of applicable prosigns or operating signals.
  - (i) Linkage or compromise of classified call signs and address groups by plain language disclosure or association with unclassified call signs.
  - (j) Profane, indecent, or obscene language.
- (3) The following practices are to be avoided:
  - (a) Use of excessive transmitting power.
  - (b) Excessive time consumed in tuning, changing frequency, or adjusting equipment.
  - (c) Transmitting at speeds beyond the capabilities of receiving operators.
  - (d) Individual mannerisms in transmitting.

f. When an operator observes the foregoing rules at all times, he is said to be *disciplined*. Communication discipline insures reliability and security in military communication.

## 99. Censorship

Censorship is the control of the dissemination of information which passes through any communication channel to prevent its reaching unauthorized persons. Radio operators are subject also to censorship from a personal standpoint while off duty. Careless conversation is one of the greatest menaces to security. Information imparted in conversation to unauthorized persons may be repeated innocently and in ignorance of its possible importance until it becomes a matter of common knowledge. Intelligence

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agents are capable of gaining valuable intelligence by correlating bits of information from conversations overheard, or from rumors. Therefore, the censorship of personal unofficial conversation is a function of every radio operator and should be exercised deliberately until it becomes habitual.

### 100. Authentication

a. Authentication systems are used to protect our armed forces against fraudulent messages, which an enemy may attempt to inject into a communication net, by providing assurance of the true identities of the stations communicating. The enemy's purpose in injecting fraudulent messages may be either to cause erroneous action, damage, or confusion, or to induce the disclosure of important information.

b. The signal officer or communication officer of the unit will indicate the authentication system to be used, and which radio transmissions are to be authenticated. Authentication systems are usually included in an organization's SOI.

c. Unauthenticated messages cannot be rejected arbitrarily. Even incorrectly authenticated transmissions may be genuine. Messages so received should be delivered without delay, but must be marked, "NOT AUTHENTICATED." The addressee will then decide as to their authenticity.

d. Voice recognition should not be relied upon as a substitute for authentication.

e. Authentication is mandatory in the following circumstances:

- (1) Whenever any operator suspects imitative deception on a circuit, the suspected station must be required to authenticate.
- (2) Any station challenged or requested to authenticate must comply. This shall not be interpreted as requiring stations to break radio silence for the sole purpose of authenticating.
- (3) Reports of initial contact with the enemy and amplifying reports must be authenticated.
- (4) Transmissions ordering radio silence or ending radio silence must be authenticated.
- (5) The transmission of a plain language message canceling another message must be authenticated.

f. Authentication is advisable, particularly during wartime, in the following circumstances:

- (1) When transmitting operating instructions which affect the military situation. Examples: Closing down a sta-



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tion, changing frequency, directing an offensive or defensive maneuver.

- (2) When making initial radio contact. In this case, authenticators should be exchanged, to prevent an unauthorized station from opening a circuit by asking a legitimate station to authenticate.
- (3) When transmitting to a station which is under radio silence.
- (4) Whenever station B challenges station A by requesting authentication, station A must authenticate (except in the case of radio silence). It is then advisable for station A, in turn, to demand authentication from station B. No station may be permitted to enter a net simply because that station has challenged stations already in the net.

g. The following are some of the operating signals used in ordering, requesting, and giving authentication:

ZNB, meaning, "Authentication is \_\_\_\_\_."

INT ZNB2, meaning, "What is the authentication of the last transmission?"

ZNB2, meaning, "Authentication of last transmission is \_\_\_\_\_."

ZNC2, meaning, "All transmissions will be authenticated on this circuit."

ZND2, meaning, "You are using authenticator incorrectly. Check authentication of your last transmission."

ZNE2, meaning, "Last transmission on this circuit was not authentic."

h. When one or more generating elements for an authenticator are taken from the text of a message, be careful to avoid being forced to authenticate a transmission consisting only of R, K, or some other prosign. In such cases an appropriate operating signal should be added to the transmission or challenge and reply authentication should be used.

### Examples

- (1) AN4 sends a message to M2D and authenticates the message in the final instructions.

M2D DE AN4—  
OP—131415Z  
BT  
Text  
BT  
ZNB \_\_\_\_\_ K



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- (2) XP5 receives a message from P7Z, but suspects enemy imitative deception. XP5 transmits:

P7Z DE XP5  
INT ZNB2 K

### 101. Emergency Destruction

*a.* When there is imminent danger of enemy capture, all papers and equipment which might be useful to the enemy must be destroyed. Destruction should be accomplished in the following sequence:

- (1) All classified documents and equipment, such as authentication systems, cryptographic instructions, and enciphering devices, those items of highest classification being destroyed first.
- (2) All unclassified equipment, such as transmitters, receivers, and vehicles.
- (3) All unclassified papers, such as message files, logs, and unclassified manuals.

*b.* The person of highest rank present at the time when danger of capture exists is responsible for issuing emergency destruction orders.

*c.* Destroy documents and papers by burning. Do not try to burn whole books or bulky sheafs and piles of paper. Crumple each sheet of paper individually for faster burning. Use gasoline if available.

*d.* How to destroy equipment: Use any heavy tools available, such as hammers, sledges, or axes. Cut all wiring. Smash all equipment assemblies and cases. BURN everything, using gasoline if available. Scatter or throw the remains in streams, if there is enough time.

## CHAPTER 7

### SUPPLEMENTARY SUBJECTS

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#### 102. Signal Operation Instructions

Technical control of signal organizations and personnel is exercised by a signal or communication officer through a type of combat order known as the SOI. Through the SOI, the signal officer assigns radio frequencies and call signs, codes, cryptographic instructions, authentication systems, and similar items. The SOI may also contain such instructions as wire tagging codes, telephone code names and numbers, and such information as sunrise and moonrise times, distribution lists, and official time designations.

#### 103. Standing Signal Instructions

In some commands, a type of combat order known as the SSI (standing signal instructions) is issued as a supplement to the SOI. When both are issued, the SOI usually includes only operational information that is subject to frequent change. The SSI contains items that are seldom changed. To permit wide distribution of its contents, the SSI is often limited to restricted and unclassified material.

#### 104. Standing Operating Procedures

The commander of a headquarters issues an SOP (standing operating procedure) to establish uniform operational and administrative procedures within his command. Among other things, this SOP usually states the minimum signal communication required by the headquarters. The signal SOP is issued by the signal or communication officer and establishes a uniform procedure for the installation, operation and maintenance of the signal communication system; it amplifies the instructions contained in the commander's SOP. The signal unit SOP, prepared by the signal unit commander, amplifies the signal SOP; it gives instructions for the unit's personnel who install, operate, and maintain signal communication for the command.

## 105. Discrepancy Reports

a. When personnel and equipment are available, friendly stations should be monitored to insure that the rules for transmission security (par. 97) are not violated. Any discrepancies noted are reported to the signal or communication officer concerned, who will bring them to the attention of the radio operators responsible for the discrepancies. Such a report must contain the following information about the station which was at fault:

- (1) Call sign.
- (2) Frequency.
- (3) Date and time.
- (4) Actual transmission(s).
- (5) Specific reference to a paragraph of this manual or other publication which has been violated.

b. The primary purpose of discrepancy reports is to improve communication by educating the radio operators concerned. If, however, it is obvious that a violation is intentional, is caused by carelessness, or is flagrant, disciplinary action will be taken.

## 106. Air-Ground Communication

When one ground station is communicating with several aircraft on a common frequency, it is frequently impossible for one aircraft to determine when communication between other aircraft and the ground station has ended. Because of this difficulty, the following rules will apply to air-ground communication when prescribed.

a. Every sequence of transmissions between a ground station and aircraft must conclude with a final transmission ending with AR by the ground station, even when the aircraft's final transmission ends with AR. Thus, if the aircraft transmits R AR, the ground station must reply R AR.

b. In air-ground communication, a ground station may, from time to time, indicate to all stations on its frequency that no transmissions are in progress and that it is free to communicate with any station by transmitting the prosign DE and its call sign followed by AR.

## 107. Distress and Radio Direction-Finder Frequencies

The international distress frequency is 500 kilocycles. The international direction-finder frequency is 375 kilocycles. In peacetime, only distress and direction-finder communications are transmitted on these frequencies. International law on the subject

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is contained in the international telecommunications convention and general radio regulations. However, the laws relating to distress and radio direction-finding are applicable in war only to the extent that the military situation justifies.

### 108. Silent Period

In peacetime, naval radio stations usually maintain a watch on the distress frequency (500 kilocycles) during the silent periods. These periods are 3 minutes each, beginning at 15 and 45 minutes past the hour, Greenwich civil time (Z time). Silent periods are not maintained on frequencies other than 500 kilocycles.

### 109. Time Signals

For the purpose of synchronizing clocks at the various stations of a net, the net control station may transmit a timing signal. The following operating signals are used:

INT ZUA, meaning, "Request a timing signal now (or at \_\_\_\_\_)."

ZUJ, meaning, "Stand by."

ZUA, meaning, "Timing signal will be transmitted now (or at \_\_\_\_\_)."

#### *Example*

XP5 requests a timing signal at 1500 hours:

AN4 DE XP5 INT ZUA 1500 K

XP5 DE AN4 R AR

AN4 informs all stations of his net that a timing signal will be transmitted at 1500 hours:

G2C DE AN4 ZUJ ZUA 1500 AR

AN4 transmits the timing signal:

G2C DE AN4 ZUA 1500—5-second dash K

The 5-second dash is timed to end exactly at 1500 hours. Exactly at the end of the 5-second dash, all stations set their clocks to 1500 hours. Then all stations receipt:

AN4 DE M2D R AR

AN4 DE XP5 R AR

AN4 DE 9SV R AR

## CHAPTER 8

### COMBATING INTERFERENCE

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#### Section I. ISOLATING SOURCES OF INTERFERENCE

##### 110. Disconnecting Antenna

When receiving interference, disconnect the antenna from the binding posts. If the noise decreases, the interference is coming from outside the receiver by way of the antenna. If the noise does not decrease, the trouble is in the receiver.

##### 111. Tuning

If the noise decreases when the antenna is disconnected, there is a possibility that it may be caused by some local friendly source. Try tuning approximately 1,000 kilocycles on each side of the assigned frequency. If there is no change in intensity, the interference is caused by some local source. See paragraphs 113 and 114.

##### 112. Indication of Jamming

If interference is localized within a few hundred kilocycles of the assigned frequency, the channel is probably being jammed. See paragraph 115 through 117.

#### Section II. INTERFERENCE FROM FRIENDLY SOURCES

##### 113. Causes

The following are the most common sources of local interference:

- a. Nearby transmitters, particularly when they are numerous or improperly tuned.
- b. Any electrical machinery, such as generators, motors, electric razors, teletypewriters.
- c. Radar sets.
- d. Vehicular ignition systems.
- e. Power lines and transformers.
- f. Friendly transmitters tuned to unauthorized frequencies or using excessive power.

## 114. How to Reduce Interference

- a. All transmitters must be properly tuned.
- b. Place receivers as far away from transmitters as practicable.
- c. Use a receiving antenna having directional characteristics, such as a half-wave doublet.
- d. If it is suspected that nearby transmitters, machinery, radar sets, or other electrical devices are causing interference, try to locate the source by momentarily stopping operation of such equipment and watching for a corresponding decrease of interference. If the source of interference can be located, it may be possible to eliminate or reduce the interference by proper adjustment or removal of the faulty equipment or by moving the receiver to a better location.
- e. Avoid locating receivers near heavily traveled roads, power lines, electrical machinery, metal bridges, or large buildings. For better signal strength, avoid valleys, depressions, locations near hills or mountains, and densely wooded areas. When possible, place receiving antennas on elevations and in clear spaces.
- f. If an operator hears a friendly station transmitting on an unauthorized frequency, he must report that fact to his immediate superior who will take proper action.
- g. The remarks of *c* and *e* above apply equally to transmitters. By using a directional transmitting antenna, signal strength is increased in the desired direction, and there is less chance of interfering with other friendly stations. A good receiving location is also a good transmitting location.

## Section III. ENEMY INTERFERENCE

### 115. General

Jamming signals may consist of keyed continuous waves, tone, voice, music, artificial static, or other types of noise signals. The enemy may intersperse jamming with false messages. The interfering waves may be amplitude modulated, frequency modulated, or a combination of both. The enemy will usually try to change the frequency of the jamming transmitter to follow any frequency shifts made in the radio sets being jammed. A number of jamming transmitters may be used simultaneously. The most commonly encountered jamming signals resemble one or more of the types listed below.

### 116. Types of Jamming

- a. *Spark*. One of the simplest types of radio jamming is that caused by one form or another of electric spark. The result is

the same type of noise as caused by an electric razor, sparking commutator brushes of an electric motor, or a vehicular ignition system with poor shielding. The interference consists of noise peaks of short duration but of high intensity and high repetition rate.

*b. Sweep-Through.* This type of jamming, as its name indicates, is the result of sweeping a carrier back and forth across a frequency at a relatively rapid rate—100 to 600 cycles per second in most cases. This causes a noise that sounds very much like an airplane engine.

*c. Stepped Tone.* This type of jamming is frequently referred to as bagpipes, because it is a series of melancholy wails. The signal consists of a number of audio tones, usually three or five, repeated over and over again. This monotonous repetition is annoying and quite effective in reducing readability.

*d. Random Noise.* This noise is similar to that heard when the gain is turned up on a receiver that is not tuned to a signal. For that reason it is particularly difficult to recognize, since it may be easily mistaken for receiver or atmospheric noise. Sometimes a radio circuit can be jammed by random noise without the operator being aware that the interference encountered is a jamming signal.

## 117. How to Combat Jamming

*a.* Always report jamming to your immediate superior. This is vital information, because the enemy may resort to jamming when an important military operation is under way.

*b.* Change net frequency and call signs according to a pre-arranged plan whenever jamming is encountered. The change of frequency must be carried out accurately and quickly. The enemy operator will have to search the frequency spectrum for some time before he can relocate the net.

*c.* Dummy transmissions may be ordered on a frequency being jammed in order to deceive the enemy and cause him to waste his jamming facilities.

*d.* Use a receiving antenna having directional characteristics, such as a half-wave doublet. This will help to improve the ratio of signal strength over jamming.

*e.* Try to locate your receiver so that there is a hill between you and the jamming station, but not between you and the station transmitting to you. This may also help to improve the ratio of signal strength to jamming.

*f.* When you have determined that you are being jammed, and have reported the jamming to your immediate superior, it is up



to you to keep operating through all interference. The enemy wants you to shut down. Use all the skill and tricks you have, but, whether they work or not, *keep operating*.

*g.* If your receiver has a crystal filter, use it. Its selectivity enables you to shut out most of the jamming that is not exactly on frequency. Tune the receiver slowly back and forth across the desired signal to find the position where the signal is clearest. Even without a crystal, this method is helpful.

*h.* Turn up the gain as high as it will go. Put cotton in your ears, or turn the headphones around so that they are facing away from your ears. If this does not improve the signal-to-noise ratio, try turning down the volume to a very low level.

*i.* There is always a chance that the jamming will not be exactly on your frequency. So try changing the bfo (beat-frequency oscillator) setting. This may give you the message on one audio tone and the jamming on another, so that you will be able to read the message. With some types of jamming against cw, the bfo may be cut off, and the signal can be heard better than before.

*j.* Don't let the enemy trick you into accepting any fake messages along with the jamming. Jamming frequently disorganizes a net so that the enemy has a chance to slip in a message or two. The only sure way to prevent this is by use of proper authentication procedures. Be particularly suspicious of any signal that seems unusually strong or that manages to lose its authenticator in the jamming every time you ask the operator for it.

*k.* If you are trying to transmit a message through jamming, be especially careful with your sending. Send slowly and distinctly. If tone telegraph is available, it may of some help against certain types of jamming. Generally, cw is the most difficult of all types of communication to jam. Remember that the jamming may be much worse at the receiving end, so take no chances.

*l.* Make no unnecessary transmissions of any sort. Try to make all transmissions short and quick. If there is apparently little traffic on your frequency, the enemy may not consider it worth jamming.

*Note.* The methods explained in paragraph 117d, *g*, *h*, *i*, and *k* are as effective in working through natural atmospheric interference as in working through jamming.



## CHAPTER 9

# MAINTENANCE OF EQUIPMENT

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### Section I. GENERAL

#### 118. Combat Efficiency

a. Communication personnel display combat efficiency in two principal ways: by adherence to prescribed communication procedures and by *maintenance of their equipment*. Messages may be delayed or transmitted in unintelligible form if proper procedure is not followed; messages certainly will not reach their addressees **IF COMMUNICATION EQUIPMENT DOES NOT FUNCTION.**

b. Every soldier who performs preventive maintenance on his rifle understands the importance of such work. He knows preventive maintenance may mean the difference between life and death, not only for himself, but also for his comrades. Soldiers who operate communication equipment must understand that maintenance of their equipment is also a matter of life and death for other American soldiers—perhaps for themselves, too. A hundred lives may be the price of a 5-minute delay in sending a message from regiment to division. Defeat in a crucial battle may be the result of a brief delay of a message requesting artillery or air support.

c. Signal Corps equipment is made from the best materials available and is designed by skilled engineers, but it is not fool-proof. Continuous preventive maintenance is needed to keep equipment ready for immediate use. Equipment that is improperly maintained becomes useless.

#### 119. Economy

a. The quantity of supplies in a company supply room is limited. Similarly, there is a limit to American national resources of labor and materials. Signal Corps equipment is expensive; it must be properly maintained and handled if it is to give maximum service.

b. In war, immense quantities of all sorts of equipment must be continuously provided for an army in the field to insure victory. Unavoidably, the complexity of supply problems causes shortages of various types of equipment at uncertain times and places. It may not be possible immediately to replace a receiver which has

been lost or has become unserviceable. Therefore, do not lose equipment or permit it to become unserviceable through lack of care.

## Section II. RESPONSIBILITY FOR MAINTENANCE

### 120. Operator's Responsibility

A radio set that will not operate is worthless. It is part of the radio operator's job to keep his set in good condition, so that it will operate when he needs it. Preventive maintenance is *more than spit and polish*; it means taking the best care of the equipment—stopping trouble before it happens. The following is a checklist for operators:

- Operate set in prescribed manner.
- Clean exterior of set and all interior sections that can be reached without unauthorized disassembly.
- Check antenna sections, mast base, and lead-in.
- Check ground connection.
- Check spare fuses. Replace burned fuses.
- Check batteries. Replace dead batteries.
- Check serviceability of headphones, microphones, and key.
- Check tuning controls for accuracy and tightness.
- Check mounting of set.
- Replace tubes when necessary.
- Tighten loose parts on exterior of set, mounting, or antenna.
- If the set has preset channels, tune them.
- Always be alert for any unsatisfactory operation while using set.
- Report trouble, damage, or unsatisfactory operation to unit repairman.

### 121. Unit Maintenance

When authorized to perform organizational maintenance, proceed as follows:

- Test tubes and maintain complete sets of serviceable tubes.
- Repair or replace cordage.
- Make periodic preventive maintenance checks.
- Clean and tighten interior sections of set.
- Lubricate where required.
- Make minor modifications of sets as called for by MWO's (modification work orders).
- Solder loose wires and connections.
- Check faulty sets to locate trouble.

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Clean, lubricate, and change brushes of dynamotors.

Replace defective fixed elements of set, including resistors, capacitors, chokes, transformers, jacks, and switches.

Repair relays and switches.

### **122. Field Maintenance**

This type of repair and maintenance is performed by mobile, semimobile, or fixed shops. This work includes maintenance too difficult or time consuming for organization repairmen to handle. It consists of inspections and repairs involving complicated adjustments and replacement of major parts and assemblies.

### **123. Depot Maintenance**

This includes work beyond the capacity of field maintenance. It is performed in fixed installations and consists of the complete rebuilding of all types of equipment, assemblies, parts, accessories, tools, and test equipment for return to depot stock.

## CHAPTER 10

### SPECIAL METHODS OF COMMUNICATION

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#### Section I. BROADCAST METHOD

##### 124. Definition

a. In the broadcast method, station A transmits traffic to any number of receiving stations; the receiving stations are not permitted to transmit directly to station A for any purpose relating to A's transmissions. The receiving stations do not receipt to station A, and any needed repetitions or verifications are obtained indirectly, preferably by means other than radio. Messages transmitted by this method are considered received when transmitted.

b. Specifically addressed broadcasts are made at prearranged times to a predetermined group of stations which are required to copy and keep a file of all such broadcasts. Each broadcast is preceded by an appropriate collective or indefinite call.

c. Broadcasts not specifically addressed are used for dissemination of information for general use. Such broadcasts are preceded by the general call to all stations "CQ."

##### 125. Advantages of Broadcast Method

a. For military reasons it may be desirable to conceal the existence or location of a radio station. This may be done by use of the broadcast method in passing traffic to that station.

b. When general information or traffic of routine nature must frequently be transmitted to a large number of stations, scheduled broadcasts provide an efficient method of communication.

##### *Example*

Assume JANK to be a collective call sign used in F27's broadcasts and including all other stations shown in figure 1. During a 5-minute period immediately preceding the scheduled broadcast time, F27 transmits a continuous call to JANK, using a call tape if automatic equipment is used. Exactly at the scheduled time, the transmission begins:

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JANK JANK JANK DE F27 F27 F27

NR 124 NR 124—

P P—191820Z 191820Z—

FM FM F27 F27—

TO TO BE6 BE6

GR27 GR27

BT

Text

BT

AR

NR 125 NR 125—

R R—191540Z 191540Z—

FM FM F27 F27—

TO TO M2D M2D

GR56 GR56

BT

Text

BT

AR

JANK JANK JANK DE F27 F27 F27 QRU AR

The transmitting station sends the operating signal QRU, meaning, "I have nothing further for you," at the end of every transmission.

*Note.* Any operator required to use the broadcast method should read ACP 124(A) for additional important information.

## **Section II. INTERCEPT METHOD**

### **126. Definition**

In this method, station A sends traffic to station B; the latter obtains necessary repetitions to insure correct reception, and repeats back, if so directed by A, or if so prescribed. The messages thus transmitted are addressed to station C, which is required to copy the transmissions, but is not permitted to receipt for messages received or to use its transmitter for any purpose directly related to these transmissions. Encrypted messages are decrypted by station B, when practicable and station B obtains corrections and verifications, as required, so that station C will receive all necessary information. The use of the intercept method requires that detailed operational instructions be given to all stations concerned, prior to beginning transmissions.

### **127. Advantages of Intercept Method**

a. The addressee station can receive traffic without revealing its existence or location.

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b. The intercept method provides greater assurance of correct reception than the broadcast method.

*Note.* See ACP 124(A) for details of intercept method procedure.

### Section III. EXECUTIVE METHOD

#### 128. Use of Executive Method

The executive method is used when it is desired to execute a message at a certain instant, or to insure that two or more units take action at the same moment.

#### 129. Use of $\overline{IX}$ and $\overline{IX}$ second (5-dash)

a. Only abbreviated plaindress messages may be used with the executive method.

b. A message which requires a signal of execution carries the prosign  $\overline{IX}$  in the message instructions of the preamble.

c. The signal of execution is known as the "executive signal" and consists of  $\overline{IX}$  followed by a 5-second dash. The instant of execution is the *END* of the 5-second dash.

d. Executive method messages may or may not carry the time group. The date and group count are never used.

e. The executive signal  $\overline{IX}$  (5-second dash), when transmitted by radio, must always be preceded by a call.

#### *Examples*

- (1) To execute an executive message.

Order:

$\overline{M2D}$  DE AN4 2248Z  $\overline{IX}$

$\overline{BT}$

$\overline{FIRE}$  MISSION ABLE X CARRY OUT PLAN FOUR

$\overline{BT}$

K

Receipt:

AN4 DE  $\overline{M2D}$  R  $\overline{AR}$

Executive Signal

$\overline{M2D}$  DE AN4  $\overline{IX}$  (5-second dash)  $\overline{AR}$

- (2) To execute a portion of an outstanding executive message, the desired portion to be executed will be retransmitted and followed by the executive signal. To execute "CARRY OUT PLAN FOUR" of the above example, the transmission would be:

$\overline{M2D}$  DE AN4 CARRY OUT PLAN FOUR  $\overline{IX}$   
(5-second dash)  $\overline{AR}$

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- (3) When ready to execute the remaining portion of (1) above, the procedure of (2) above would be repeated.

f. If there is any doubt about the correct reception of an executive method message, a repetition of the complete message must be requested.

### *Example*

DE M2D IMI K

g. IX (5-second dash) alone after a call means, "Execute all unexecuted messages which I have transmitted." IX may be repeated a few times while awaiting the transmission of the 5-second dash.

h. Identification of an "execute to follow" message must be transmitted along with the executive signal whenever it is one of several unexecuted messages, or when a considerable time has elapsed between the transmission of the "execute to follow" message and the transmission of the executive signal.

## 130. Verifications and Corrections of Executive Method Messages

Verifications of executive method messages are requested and given as shown in the following example. If the message is found to be incorrect, it must be canceled to all addressees and a new executive method message transmitted. See paragraph 131.

### *Example*

M2D requests verification of an executive method message:

DE M2D J (identification data if necessary) K

AN4 receipts:

DE AN4 R AR

If AN4 finds that the message was correct as originally sent, he transmits:

DE AN4 C—(repeats original message) K

M2D receipts.

## 131. Canceling Executive Method Messages

a. An executive method message cannot be canceled after the executive signal has been transmitted.

b. Executive method messages awaiting execution can be canceled individually or as a group by a separate message(s).

### *Examples*

- (1) To cancel all messages awaiting execution, the group NEGAT is transmitted:

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M2D DE AN4

BT

NEGAT

BT

K (or AR)

- (2) To cancel only one of several messages awaiting execution, the group NEGAT must be followed by identification data, such as the time group, if used, or repetition of the text:

M2D DE AN4

BT

NEGAT CHARLIE SEVEN

BT

K

- c. To cancel a portion of a message awaiting execution, the group NEGAT is followed by the portion of the message to be annulled.

*Example*

The following message is awaiting execution:

M2D DE AN4 IX

BT

FIRE MISSIONS BAKER FIVE X BAKER NINE X DOG ONE

BT

K

To cancel "BAKER NINE," AN4 transmits:

M2D DE AN4

BT

NEGAT BAKER NINE

BT

K

- d. When a message is awaiting the signal of execution and a portion of it has been executed or canceled, only the remainder of the message is considered to be outstanding.



## APPENDIX

### COMMUNICATION OPERATING SIGNALS

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#### 1. General

*a.* The operating signals listed in this appendix are in the form of a decoding section and contain only those signals used in this manual.

*b.* Operating signals which begin with the letter Q are prescribed for international use in all types of communications, military or nonmilitary.

*c.* Operating signals which begin with the letter Z are designed to cover military communications requirements not adequately covered by the Q code.

*d.* Z signals are to be used only for military communications.

*e.* To put an operating signal in the form of a question, INT is transmitted before the signal.

*f.* For a complete list of operating signals, with examples and instructions, see JANAP 131(A).

## 2. Decoding Section

Signal

Order, advice, or answer

QRK

The readability of your signals (or those of \_\_\_\_\_) is (1 to 5).

QRM

I am being interfered with.

QRN

I am troubled by static.

QRS

Send more slowly (\_\_\_\_\_ W.P.M.)

QRU

I have nothing for you.

QSA

The strength of your signals (or those \_\_\_\_\_) is (1 to 5).

QSV

Send a series of V's on this frequency (or \_\_\_\_\_ kcs or mcs).

QSY

Change to transmission on another frequency (or on \_\_\_\_\_ kcs or mcs).

QTC

I have \_\_\_\_\_ telegrams for you (or for \_\_\_\_\_).

ZAN

Transmit only messages of and above precedence \_\_\_\_\_.

ZBH

Make preliminary call before transmitting traffic.

ZBO

I have (or \_\_\_\_\_ has) \_\_\_\_\_ message(s) (number indicating number of message(s) may be followed by O, OP, P, or NM to indi-

Question

What is the readability of my signals (or those of \_\_\_\_\_) ?

Are you being interfered with ?

Are you troubled by static ?

Shall I send more slowly ?

Have you anything for me ?

What is the strength of my signals (or those of \_\_\_\_\_) ?

Shall I send a series of V's on this frequency (or \_\_\_\_\_ kcs or mcs) ?

Shall I change to transmission on another frequency ?

How many telegrams have you to send ?

Of what precedence and for whom are your messages ?

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cate precedence other than routine) for you  
(or for \_\_\_\_\_).

Report disposal of message \_\_\_\_\_.

Message \_\_\_\_\_ (1. Not received; 2. Unidentified; give better identification data.).

This message has been delivered by other means  
to the addressee(s) immediately following  
this operating signal.

Message (or message \_\_\_\_\_) acknowledged.

Inform me when this message (or message  
\_\_\_\_\_) has been received by addressee(s)  
(or by \_\_\_\_\_).

This message is an exact duplicate of a message  
previously transmitted.

This message (or message \_\_\_\_\_) is being (or  
has been) passed to you (or to \_\_\_\_\_) for  
(1. Action; 2. Info; 3. Comment.).

Change station serial number of a message  
\_\_\_\_\_ to read number \_\_\_\_\_. Or Assign  
to message \_\_\_\_\_ station serial number  
\_\_\_\_\_.

Station serial number(s) or channel number(s)  
of last message(s) transmitted to you (or to  
\_\_\_\_\_) is (are) \_\_\_\_\_.

Have you received message \_\_\_\_\_?

Request you acknowledged message \_\_\_\_\_.

Two messages, \_\_\_\_\_ and \_\_\_\_\_ (or group  
counts and time of origin \_\_\_\_\_ and \_\_\_\_\_  
\_\_\_\_\_), both received as serial number \_\_\_\_\_.  
What are correct serial numbers?

What is (are) station serial number(s) or  
channel number(s) of last message(s) you  
transmitted to me (or to \_\_\_\_\_)?

ZKA

I am (or \_\_\_\_\_ is) controlling station (NCS) on this frequency (or on \_\_\_\_\_ kcs or mcs).

ZKB

It is necessary to obtain the permission of the controlling station (NCS) before transmitting messages.

ZKD

Take control of net (for \_\_\_\_\_) (until \_\_\_\_\_).

ZKF

Station leaves net temporarily (or for \_\_\_\_\_ minutes) (to communicate with \_\_\_\_\_) (will be on \_\_\_\_\_ kcs or mcs).

ZKJ

1. Close down (until \_\_\_\_\_); 2. I am closing down (until \_\_\_\_\_).

ZNB

Authentication (of \_\_\_\_\_) is \_\_\_\_\_ (1. Message \_\_\_\_\_; 2. Last transmission; 3. \_\_\_\_\_).

ZNC

All transmissions will be authenticated \_\_\_\_\_ (1. On all circuits; 2. On this circuit; 3. On (frequency)).

ZND

You are using authenticator incorrectly \_\_\_\_\_ (1. Verify authenticator system key; 2. Check authentication of your last transmission.).

Who is controlling station (NCS) on this frequency (or on \_\_\_\_\_ kcs or mcs)?

Is it necessary to obtain the permission of the controlling station (NCS) before transmitting messages?

Shall I take control of net, (for \_\_\_\_\_) (until \_\_\_\_\_)?

May I close down (until \_\_\_\_\_)?

What is authentication of \_\_\_\_\_ (1. Message \_\_\_\_\_; 2. Last transmission; 3. \_\_\_\_\_)?

ZNE

Last transmission on this circuit (or transmission \_\_\_\_\_) was—(1. Authentic; 2. Not authentic.).

ZOE

Give me your message. I will dispose of it.

ZRA

Your frequency is—(1. Correct; 2. Slightly (or \_\_\_\_\_ cycles or kcs) high; 3. Slightly (or \_\_\_\_\_ cycles or kcs) low.).

ZUA

Timing signal will be transmitted now (or at \_\_\_\_\_). The numerals indicating the time will be followed by a five-second dash terminating exactly at the time indicated.

ZUE

Affirmative (Yes):

ZUG

Negative (No).

ZUJ

Standby.

ZWL

No forwarding action is required to addressees immediately following this operating signal.

Can you accept message for \_\_\_\_\_?

How does my frequency check?

Request a timing signal now (or at \_\_\_\_\_).

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[AG 413.44 (27 Apr 53)]

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